

# RWS – Tradition & Innovation. Made in Germany.



## Ammunition for armed forces and law enforcement

RWS GmbH is the reliable partner for law enforcement and military customers in all areas of small calibre ammunition. Since 1886, we have been synonymous with innovation and quality for infantry and law enforcement ammunition as one of the preeminent national and international manufacturers in this segment.

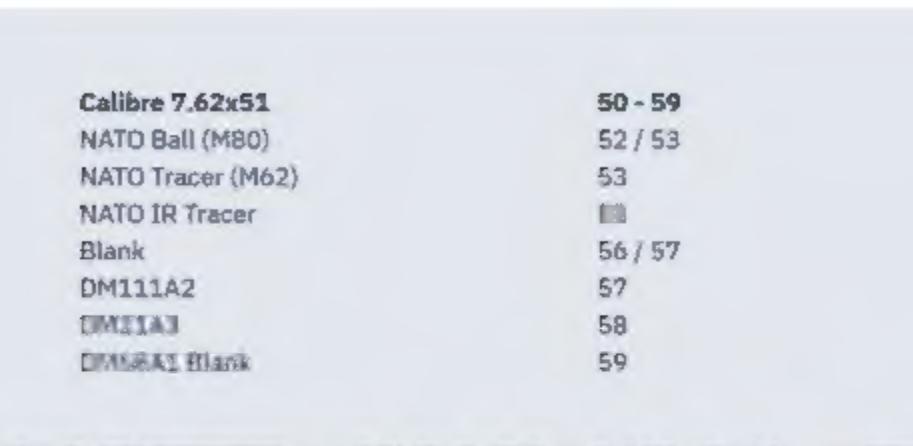
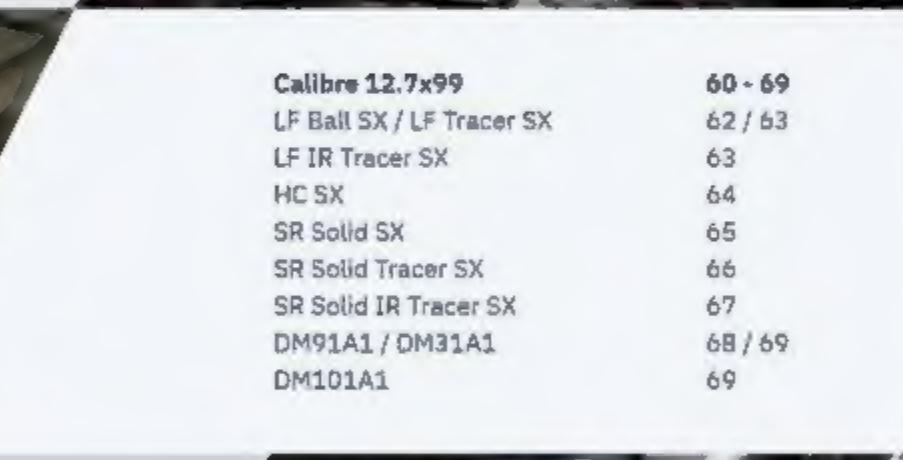
All over the world, armed forces and law enforcement agencies with highly diverse requirements appreciate our premium products. In addition to standard ammunition, which fully meets NATO requirements, we are also Europe's leading manufacturer of low-pollutant ammunition for mission, training and simulation scenarios. Special products for very particular, customised use cases round off our portfolio.

## Research, development, innovation

As a passionate driver of innovation, we aim at assisting our customers in the creation of tailored products, to ensuring greater security in our world. In doing so, we can draw on long-standing experience in the area of research und development. Products such as the 4.6x30 or the first heavy metal-free primer kits speak for themselves when it comes to rigorous quality in development matters. As a reliable partner known for igniting ideas, we would gladly assist you in the creation of special products or system solutions for firearms and ammunition.



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9x19 GREEN RANGE SXF  
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9x19 GREEN RANGE S SXF  
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## The world's most successful handgun calibre 9 x 19

For more than 100 years, our 9x19 calibre duty and training ammunition has proven its value to a large number of law enforcement agencies and military forces around the world.

Today, the portfolio includes a wide range of modern 9x19 loads for pistols and sub-machine guns. RWS GmbH is a leader in the sector of emission-reduced duty and training ammunition for law enforcement and military use.

## ACTION Line - one solution for all missions

Conventional full metal jacket bullets no longer optimally fulfill the requirements of modern duty ammunition for authorities. Low energy release in the target medium can easily lead to over-penetration of soft targets and thus endanger nearby bystanders.

Due to the increased risk of terrorism and willingness to use violence, products now require solutions that reliably contain and prevent such situations, whilst simultaneously significantly reducing the risk of background threats to uninvolved third parties.

The products in our ACTION Line offer these solutions - in combination with our patented IN-TOX Forensic ignition kit with an absolute minimum of pollutant emissions for the shooter and the possibility of forensic analysis.

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NT Line  
always reliable - everywhere

We are proud to present our product range fully meeting NATO requirements and covering the calibres 9x19, 5.56x45, 7.62x51 and 12.7x99. A range that offers a wealth of deployment, simulation and training options with a wide variety of weapon systems.

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SOFT CORE  
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7.62mmx51 DM111A2  
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7.62mmx51 DM21A3  
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18.2mmx70 DM209  
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18.2mmx70 DM219  
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## DM Line –

A reliable partner of the German Armed Forces since 1959.

The history of our DM Line in simulation, mission and German Armed Forces training goes back a long way. The basic requirements: maximum reliability even under the most diverse climatic conditions and consistent reduction of pollutants (SINTOX® ignition technology, REACH-compliant propellant powder). Only products that achieve the highest manufacturing standards make it through our partner's demanding qualification process and are introduced as a „German model“ for widespread use in the troops – which includes snipers, bodyguards and other special forces.

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12/70 ROTTWEIL MAGNUM ENTRY I  
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12/70 ROTTWEIL MAGNUM ENTRY II  
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12/70 ROTTWEIL MAGNUM ENTRY II  
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## DAG Line – our line of tradition

As the original company name of Dynamit Nobel AG, the DAG Line is firmly established as an extremely reliable ammunition series of the highest quality standards and has gained worldwide recognition as a manufacturer's label fully meeting NATO requirements.

These premium cartridges for training and operations cover an extremely wide range of calibres – from 9x19 to 4.6x30 and 12.7x99.

**9x19 ACTION 4 SXF**

Bullet	Solid 6.1 g / 94 gr
Bullet material	Brass / Plastic
Primer / Propellant powder	SINTOX Forensis® Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 10.1 g
Net, explosive weight	approx. 0.6 g
Term of Reference	TR 2009**
Temperature Range	-30°C to +52°C
Mean chamber pressure	max. 2700 bar (21°C)
Velocity $v_3$ / Energy	420 m/s (1378 fps) 538 J / 100 mm Barrel
Accuracy at 25 m	$s_d \leq 25$ mm, 30 Cart. 100 mm Barrel
Max. energy transfer*	≤ 60 J/cm / 100 mm Barrel
Penetration at 5 m	min. 4x 1.0 mm
Packaging / Weight	50pcs. Folding Box / approx. 0.6 kg 1000pcs. Cardboard Box / approx. 11.8 kg

**9x19 ACTION 5 SXF**

Bullet	Solid 6.1 g / 94 gr
Bullet material	Brass / Plastic
Primer / Propellant powder	SINTOX Forensis® Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 10.1 g
Net, explosive weight	approx. 0.6 g
Term of Reference	Technical terms of delivery
Temperature Range	-20°C to +52°C
Mean chamber pressure	max. 2700 bar (21°C)
Velocity $v_3$ / Energy	420 m/s (1378 fps) 540 J / 100 mm Barrel
Accuracy at 25 m	$s_d \leq 25$ mm, 30 Cart. 100 mm Barrel
Max. energy transfer *	≤ 75 J/cm / 100 mm Barrel
Packaging / Weight	50pcs. Cardboard Box / approx. 0.6 kg 1000pcs. Cardboard Box / approx. 11.3 kg

**9x19 ACTION 4 SXF**

6.1 g / 94 gr

**9x19 ACTION 5 SXF**

6.1 g / 94 gr



The 9x19 ACTION 4 SXF is a cartridge specially designed for police and official use. It was developed and fully certified in accordance with the technical guideline for operational ammunition 2009. It is lead-free and with low-emission. This is ensured by a deformation bullet made of turned brass with a mass of 6.1 g. Particular features such as the special bullet geometry and the attached plastic starter cap enable controlled deformation and energy transfer to the target (max. 60 J/cm). Another special feature of the product is the X-ray detectable additive in the plastic cap, which facilitates its location during wound care.

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**9x19 ACTION 5 SXF**

6.1 g / 94 gr



The 9x19 ACTION 5 SXF cartridge is an upgrade of the 9x19 ACTION 4 SXF in regard to energy transfer to the target. It is a tactical cartridge that was developed specifically for handguns used by law enforcement or the police. The special bullet geometry leads to a maximum energy transfer of 75 J/cm, which equates to a 25% increase in energy transfer to the target. The lead-free deformation bullet is equipped with an attached plastic starter cap that ensures consistent deformation response even on covered soft targets.



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**9x19 ACTION 6 SXF**  
6.1 g / 94 gr

The ACTION 6 SXF is a tactical cartridge for law enforcement that was adapted and tested according to the C.I.P. requirements. It can be used as a tactical or training cartridge and is optimised for use in full-size duty pistols. It also offers significantly reduced collateral risk during mission scenarios. The bullet geometry was optimised in line with the technical requirements of the C.I.P. This means that reliable deformation is guaranteed due to the lower gas pressure compared to TR 2009, even for covered targets. It also passes all the requirements of the FBI test for handgun ammunition (10% gelatine).

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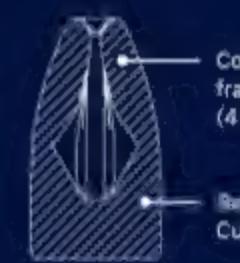
## 9x19 ACTION SE SXF

7.0 g / 108 gr



The 9x19 ACTION SE SXF was developed as an effective combat enhancement for submachine guns. It is compatible with handguns and submachine guns. Fired from a submachine gun, the special bullet reliably pierces an SK1 ballistic vest, even from a distance of 50 metres. The bullet deforms into four fragments and transfers up to 60 J/cm of energy to the target medium.

A significant advantage is that the bullet petals remain non-frangible during deformation and the residual weight of the bullet is over 90%.



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9x19 ACTION 6 SXF	
Bullet	Solid 6.1 g / 94 gr
Bullet material	Basis / Plastic
Primer / Propellant powder	SINTOX® Foresis® Double-based Nitrocellulose powder
Case material	Basis
Cartridge weight	approx. 1.01 g
Net explosive weight	approx. 0.5 g
Term of reference	C.I.P.
Temperature Range	-20°C to +52°C
Mean chamber pressure max.	2.550 bar (21°C)
Velocity <sub>31</sub> /	420 m/s (1377 fips)
Energy	53 J / 25.0 mm Barrel
Accuracy at 5 m	± 25 mm; 3 Cart.
100 mm Barrel	1.00 mm
Max. energy transfer*	6.0 J/cm / 15.0 mm Barrel
Packaging / Weight	50-pcs. Cardboard Box / approx. 0.6 kg 100-pcs. Cardboard Box / approx. 1.2 kg

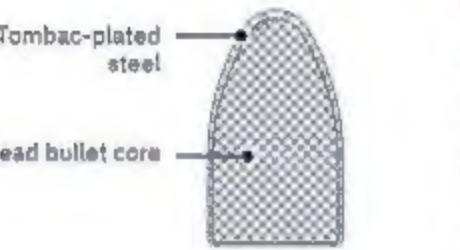
9x19 ACTION SE SXF	
Bullet	Solid 7.0 g / 108 gr
Bullet material	Basis
Primer / Propellant powder	SINTOX® Foresis® Double-based Nitrocellulose powder
Case material	Basis
Cartridge weight	approx. 1.2 g
Net explosive weight	approx. 0.5 g
Term of reference	Technical Terms of delivery
Temperature Range	-30°C to +52°C
Mean chamber pressure max.	2.000 bar (21°C)
Velocity <sub>31</sub> /	450 m/s (1477 fips)
Energy	71 J / 22.0 mm Barrel
Accuracy at 5 m	± 25 mm; 3 Cart.
100 mm Barrel	1.00 mm
Max. energy transfer*	6.0 J/cm / 20.0 mm Barrel
Penetration at 50 m	S-1 VFM-3
Packaging / Weight	50-pcs. Cardboard Box / approx. 0.6 kg 100-pcs. Cardboard Box / approx. 1.2 kg

\* in 20% gelatine



## 9x19 NATO BALL

8.0 g / 124 gr

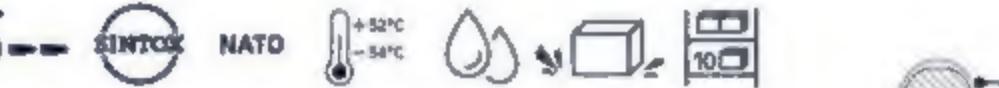


The 9x19 NATO Ball is a tactical and training cartridge for military use. The cartridge is fully compatible with both pistols and submachine guns. It uses a heavy full metal jacket bullet with a lead core and weighs 8.0 g. This bullet design fully complies with the requirements of the Hague Convention respecting the Laws and Customs of War on Land (Annex E, Article 23). A SINOXID primer is used in the load, which guarantees reliable ignition even under the most adverse conditions. The cartridge meets the NATO standards according to the requirements of AEP-97.

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## 9x19 NATO BALL SX

8.0 g / 124 gr



The 9x19 NATO Ball SX is an operational and training cartridge for military users. It is equally suitable for use in pistols and submachine guns without restriction. The fully encapsulated bullet used is an 8.0 g full metal jacket bullet with a lead core. The use of the fully encapsulated bullet and the heavy metal-free SINTOX primer reduces the shooter's exposure to harmful substances to an absolute minimum. It can therefore be used in indoor shooting ranges without any restrictions.

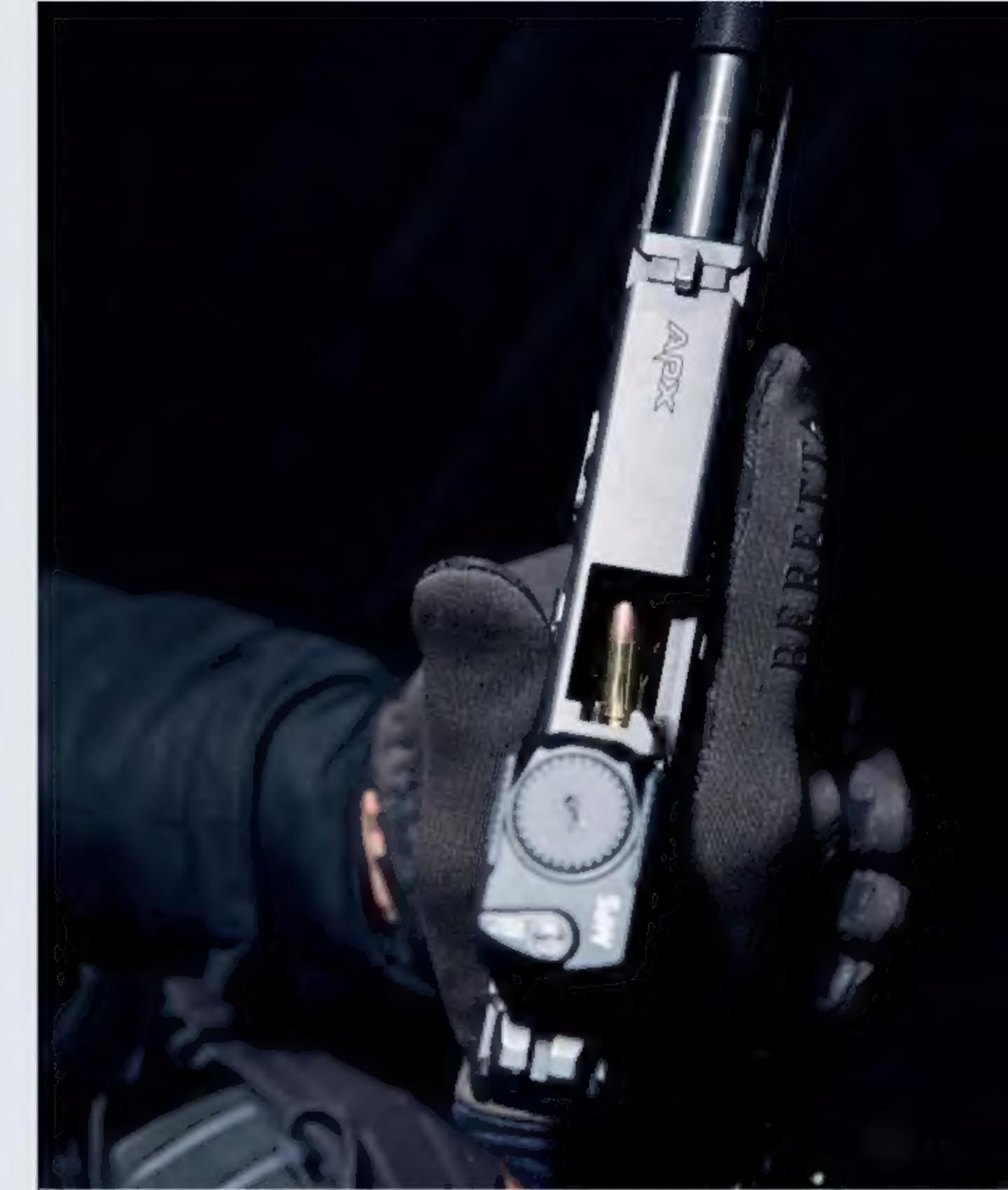
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### 9x19 NATO BALL

Bullet	Full metal jacket 8.0 g / 124 gr
Bullet material	Lead / Tombac-plated steel
Primer / Propellant powder	SINOXID® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 13 g
Net. explosive weight	approx. 0.4 g
Term of Reference	MC-MOPI (AOP-4090)
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 2850 bar (21°C)
Velocity $v_{50}$ / Energy	385 m/s (1263 fips) 593 J / 200 mm Barrel
Accuracy at 50 m	$s_H; s_V \leq 200$ mm, 30 Cart. 200 mm Barrel
Packaging / Weight	50pcs. Folding Box / approx. 0.65 kg 1500pcs. M2A1Metal box/ approx. 22.5 kg

### 9x19 NATO BALL SX

Bullet	Full metal jacket Soft core 8.0 g / 124 gr
Bullet material	Lead / Tombac / Steel (coated)
Primer / Propellant powder	SINOXID® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.3 g
Net. explosive weight	approx. 0.6 g
Term of Reference	MC-MOPI (AOP-4090)
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 2800 bar (21°C)
Velocity $v_{50}$ / Energy	385 m/s (1263 fips) 593 J / 200 mm Barrel
Accuracy at 50 m	$s_H; s_V \leq 200$ mm, 30 Cart. 200 mm Barrel
Packaging / Weight	50pcs. Folding Box / approx. 0.65 kg 1500pcs. M2A1Metal box/ approx. 22.5 kg



## 9x19 LF FMJ SX

6.0 g / 93 gr



The 9x19 LF FMJ SX is a lead-free tactical and training cartridge for law enforcement and military users. The cartridge is fully compatible with pistols and submachine guns proofed according to C.I.P. It has a classic full metal jacket bullet with a zinc core. The combination of lead-free bullet, REACH-compliant propellant powder and heavy metal-free primer reduces the shooter's exposure to potentially harmful emissions to an absolute minimum.

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## 9x19 LF FMJ SXF

6.0 g / 93 gr



The 9x19 LF FMJ SXF is a lead-free tactical and training cartridge for law enforcement and military users. The cartridge is fully compatible with pistols and submachine guns that have been tested with the increased gas pressure specified in the technical guideline for 9 mm tactical ammunition. It has a classic full metal jacket bullet with a zinc core. The combination of lead-free bullet, REACH-compliant propellant powder and spiked heavy metal-free primer reduces the shooter's exposure to potentially harmful emissions to an absolute minimum. The SINTOX Forensis primer also enables forensic analyses.

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Bullet cross section see also 9x19 LF FMJ SX

### 9x19 LF FMJ SXF

Bullet	Full metal jacket 6.0 g / 93 gr
Bullet material	Zinc/Tombac
Primer / Propellant powder	SINTOX Forensis <sup>®</sup> , Double-based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 1.2 g
Net explosive weight	approx. 0.6 g
Term of reference	Technical terms of delivery
Temperature Range	-20°C to +50°C
Mean chamber pressure	max. 3250 bar (21°C)
Velocity v <sub>3</sub> / Energy	435 m/s (1477 ft/s) 568 J / 160 m Barrell
Accuracy ± 25 m	± 25 mm, 30 Ctr. / 50 mm Barrell
Max. energy transfer <sup>*</sup>	≤ 500 J / 100 m Barrell
Packaging / Weight	50 pcs. Folding Box / approx. 0.6 kg 1000 pcs. Cardboard Box / approx. 15.5 kg

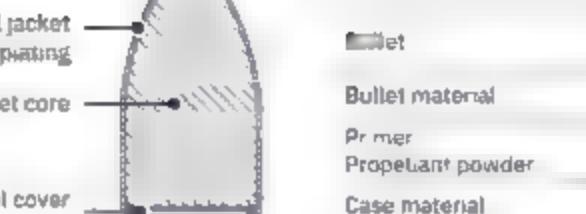
### 9x19 LF FMJ SX

Bullet	Full metal jacket 6.0 g / 93 gr
Bullet material	Zinc/Tombac
Primer / Propellant powder	SINTOX Forensis <sup>®</sup> , Double-based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 1.2 g
Net explosive weight	approx. 0.6 g
Term of reference	C.I.P.
Temperature Range	-20°C to +50°C
Mean chamber pressure	max. 3250 bar (21°C)
Velocity v <sub>3</sub> / Energy	435 m/s (1477 ft/s) 568 J / 160 m Barrell
Accuracy ± 25 m	± 25 mm, 30 Ctr. / 50 mm Barrell
Max. energy transfer <sup>*</sup>	≤ 500 J / 100 m Barrell
Packaging / Weight	50 pcs. Folding Box / approx. 0.6 kg 1000 pcs. Cardboard Box / approx. 15.5 kg

\* in 20% Gefahr

## 9mmx19 DM41

8.0 g / 124 gr



The 9x19 DM41 is a tactical and training cartridge for law enforcement users. It was engineered and tested specifically for the Federal Ministry of the Interior and is fully compatible with both pistols and submachine guns. It uses a completely encapsulated full metal jacket bullet with a lead core and weighs 8.0 g. Emissions are reduced to a minimum in conjunction with the SINTOX primer, which makes the cartridge suitable for use in enclosed spaces.



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### DATA

Net	Encapsulated Full metal jacket Soft core 8.0 g / 124 gr
Bullet material	Lead Steel (tombac and tin plated)
Primer	SINTOX®
Propellant powder	Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.2 g
Net explosive weight	approx. 0.5 g
Term of Reference	Technical terms of delivery
Temperature Range	-30°C to +52°C
Mean chamber pressure	max. 2800 bar (21°C), min. 355 m/s (1164 fps)
Velocity v <sub>el</sub> / Energy	504 J 200 mm Barrel s. ≤ 25 mm 30 Cart 200 mm Barrel
Accuracy at 50 m	50pcs. Folding Box / approx. 0.65 kg 1000pcs. Cardboard box / approx. 13.6 kg
Packaging / Weight	

## 9x19 DM61A1

Bullet Full metal jacket Soft core 8.0 g / 124 gr

Bullet material Lead Steel (tombac and tin plated)

Primer / Propellant powder SINTOX® / Double based Nitrocellulose powder

Case material Brass

Cartridge weight approx. 12.2 g

Net explosive weight approx. 0.5 g

Term of Reference Technical terms of delivery

Temperature Range 54°C to +63°C

Mean chamber pressure max. 2850 bar (21°C)

Velocity v<sub>el</sub> / Energy 370 m/s (1214 fps)

548 J 200 mm Barrel

s. ≤ 25 mm, 30 Cart.  
200 mm Barrel50pcs. Folding Box / approx. 0.65 kg  
2500pcs. Wooden crate, approx. 37.5kg

## 9mmx19 DM51A1

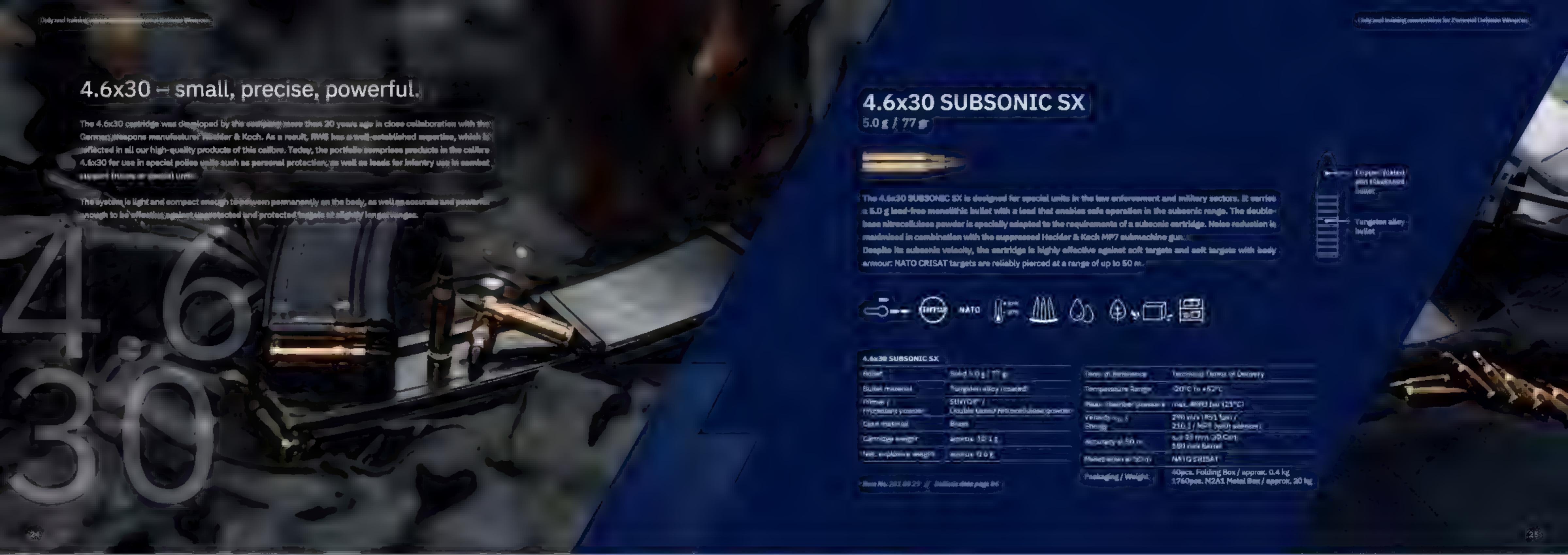
8.0 g / 124 gr



The DM51A1 is the current tactical and training cartridge used by the German Armed Forces in 9x19 calibre. It was engineered and qualified to meet the high technical requirements of the Bundeswehr. The cartridge is now widely used by the German Armed Forces and is appreciated for its excellent reliability and quality. A fully encapsulated full metal jacket bullet is used for the load. The shooter's exposure to harmful substances is reduced to a minimum in conjunction with the patented heavy metal free SINTOX primer, which makes the cartridge completely suitable for use in indoor shooting ranges. The DM51A1 cartridge is NATO-qualified according to the requirements of AEP-97.

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## 4.6x30 – small, precise, powerful.

The 4.6x30 cartridge was developed by the company more than 20 years ago in close collaboration with the German weapons manufacturer Heckler & Koch. As a result, RWS has a well-established repertoire, which is reflected in all our high-quality products of this calibre. Today, the portfolio comprises products in the calibre 4.6x30 for use in special police units such as personal protection as well as loads for infantry use in combat support teams or special units.

The system is light and compact enough to be worn permanently on the body, as well as accurate and powerful enough to be effective against unprotected and protected targets at slightly longer ranges.

## 4.6x30 SUBSONIC SX

5.0 g / 77 gr



The 4.6x30 SUBSONIC SX is designed for special units in the law enforcement and military sectors. It carries a 5.0 g lead-free monolithic bullet with a lead that enables safe operation in the subsonic range. The double-base nitrocellulose powder is specially adapted to the requirements of a subsonic cartridge. Noise reduction is maximised in combination with the suppressed Heckler & Koch MP7 submachine gun.

Despite its subsonic velocity, the cartridge is highly effective against soft targets and soft targets with body armour: NATO CRISAT targets are reliably pierced at a range of up to 50 m.



### 4.6x30 SUBSONIC SX

Format	solid 5.0 g / 77 gr	Impact Velocity / Delivery	approx. 300 m/s
Bullet material	High-titanium alloy / lead-free	Temperature Range	-20 °C to +62 °C
Driver / Propellants	SEVORD / Double-base Nitrocellulose	Max. chamber pressure	max. 4000 bar (23 °C)
Case material	Brass	Velocity	298 m/s (0.51 bar) / 216 J / M21 (0.51 bar)
Cartridge weight	approx. 12.1 g	Accuracy @ 50 m	± 25 mm (2.0 bar) / 251 mm Barrel
Net explosive weight	approx. 0.6 g	Penetration @ 50 m	NATO CRISAT

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Impact Velocity / Delivery	approx. 300 m/s
Temperature Range	-20 °C to +62 °C
Max. chamber pressure	max. 4000 bar (23 °C)
Velocity	298 m/s (0.51 bar) / 216 J / M21 (0.51 bar)
Accuracy @ 50 m	± 25 mm (2.0 bar) / 251 mm Barrel
Penetration @ 50 m	NATO CRISAT

40pcs. Folding Box / approx. 0.4 kg  
1760pcs. M2A1 Metal Box / approx. 20 kg



<b>4.6x30 ACTION SX</b>	4.6x30
Bullet	Solid 2.0 g / 31 gr
Bullet material	Tombac
Primer / Propellant powder	SINTOX® Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 6.9 g
Net explosive weight	approx. 0.6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-30°C to +52°C
Mean chamber pressure	max. 4000 bar 21°C
Velocity $v_1$	678 m/s 2224 fps
Energy	460 J 180 mm Barrel
Accuracy at 100 m	$\pm 5$ 30 mm, 30 Cart 180 mm Barrel
Packaging / weight	40pcs. Folding Box approx 0.3 kg 1920pcs. M2A1 Metal Box approx 16.5 kg

<b>4.6x30 FMJ SX</b>	
Bullet	Full Metal Jacket 2.6 g 40 gr
Bullet material	Lead Steel tombac-plated
Primer	SINTOX®
Propellant powder	Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 6.9 g
Net explosive weight	approx. 0.6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 4000 bar 21°C
Velocity $v_1$	612 m/s 2088 fps
Energy	487 J 180 mm Barrel
Accuracy at 100 m	$\pm 5$ 30 mm, 30 Cart 180 mm Barrel
Packaging / weight	40pcs. Folding Box approx 0.3 kg 1920pcs. M2A1 Metal Box approx 17.6 kg

**4.6x30 ACTION SX**

2.0 g / 31 gr



Controlled deformation  
Copper alloy bullet

The 4.6x30 is a cartridge that is characterised by its high effectiveness against covered and uncovered soft targets due to a lead-free copper alloy. The lead-free tombac bullet's controlled deformation enables high energy transfer to the target and hence minimises the risk of collateral damage. The cartridge is therefore ideally suited for use by the police and other law enforcement agencies. It is also suitable for use for use in training in enclosed spaces or indoor shooting ranges, as the bullet is lead-free and with low-emission. The cartridge is specially adapted to the requirements of the Heckler & Koch MP7 submachine gun.

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**4.6x30 FMJ SX**

2.6 g / 40 gr



Full metal jacket soft core cartridge in the world's first lead-free 4.6x30 caliber, developed in close cooperation with the German firearms manufacturer Heckler & Koch. It is perfectly optimised for the polymer barrel used in the MP7 A2 personal defence weapon, which ensures maximum functionality, even with fully automatic fire. The cartridge is equally suited to tactical use and training and has a lead core that is completely encased in a tombac-plated steel jacket. The full metal jacket soft core bullet weighing 2.6 g protects the bullet tip and wings. The cartridge highly suitable for use in shooting ranges.

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**4.6x30 AP SX**

2.0 g / 31 gr



The 4.6x30 AP SX, an operational cartridge for law enforcement and military users, is specifically optimised to penetrate body armour. The lead-free monolithic bullet weighing 2.0 g is highly effective against soft targets and body armour. This enables even the penetration of a NATO CRISAT target, consisting of 20 layers of Kevlar and a 1.6 mm thick titanium plate, at a range of 200 m.



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Copper-coated bullet core,  
copper-coated, blackened

**4.6x30 TRAINING SX**

1.7 g / 26 gr



The 4.6x30 TRAINING SX is a lead-free training cartridge for law enforcement and military users. The semi-jacketed bullet weighing 1.7 g has a tin core encased in a tombac jacket. The exposed projectile core and optimised projectile geometry minimise the risk of ricochets. The cartridge is also ideal for enclosed shooting and training facilities thanks to the combination of SINTOX primer and REACH-compliant propellant powder.



Item No. 233 76 82 // Ballistic data page 84

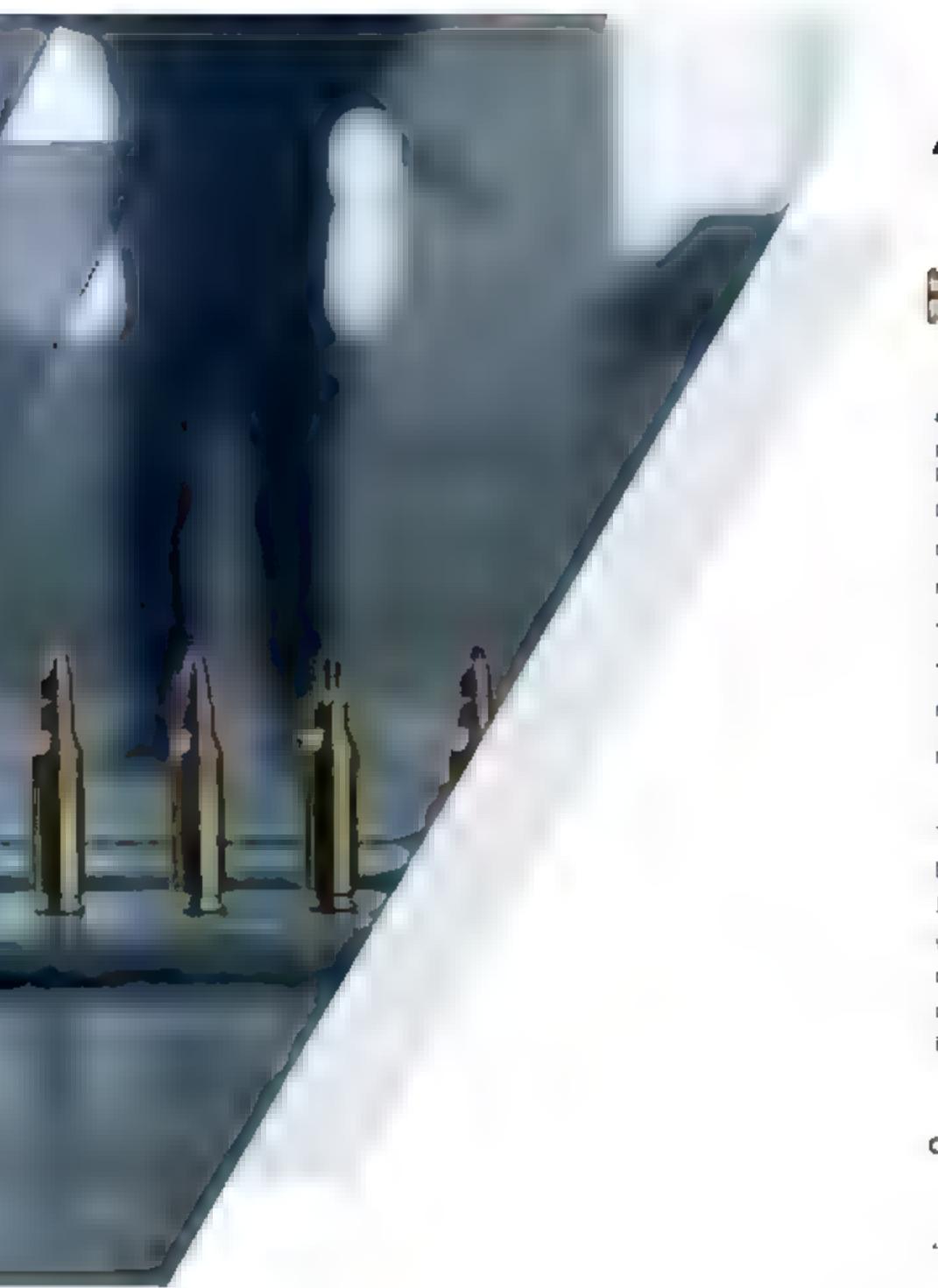
**4.6x30 AP SX**

Bullet	Solid 2.0 g / 31 gr
Bullet material	Steel/copper
Primer	SINTOX®
Propellant powder	Doublebased Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 6.3 g
Net explosive weight	approx. 0.6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	max 4000 bar (21°C)
velocity	670 m/s / 2186 fps
Energy	449 J / 120 mBar/m
Accuracy at 100 m	± 130 mm / 3.0 Cal.
Penetration at 200 m	180 mm / Barrel
Packaging / Weight	NATO-CRISAT
	40pc-Folding Box, approx. 3.6 kg
	1200pc MA Metal Box, approx. 15.6 kg

**4.6x30 TRAINING SX**

Bullet	Jacketed core 1.7 g / 26 gr
Bullet material	Tin / Tombac
Primer	SINTOX®
Propellant powder	Doublebased Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 6.3 g
Net explosive weight	approx. 0.6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	4000 bar (21°C)
velocity	630 m/s / 2066 fps
Energy	460 J / 180 mBar/m
Accuracy at 100 m	± 130 mm / 3.0 Cal. / 180 mm Bar.
Packaging / Weight	40pc-Folding Box, approx. 3.6 kg
	1200pc MA Metal Box, approx. 15.6 kg

## **30 BLANK SX**



— 1 —

KK SX

powder	SINTOX® Single based Nitrocellulose powder
al	Brass
ight	approx. 4.5 g
ve weight	approx. 0.3 g
erence	Technical Terms of Delivery
e Range	20°C to +40°C
oper pressure	max. 4000 bar 21°C
Weight:	40pcs. Folding Box / approx. 0.3 kg 1920pcs. M2A1 Metal Box / approx. 12.7 kg

0 BLANK SX manoeuvre cartridge is designed for training and simulation scenarios in law enforcement and for military users.

cially engineered for the Heckler & Koch MP7 personal defence  
enable flawless functionality. A suitable manoeuvre cartridge  
required to ensure that the firearm functions properly. The manoeuvre  
is also completely suitable for indoor shooting ranges or training



75 52

## 4.6x30 SEMI FRANGIB

1.7 g / 26 g



The 4.6x30 Semi Frangible SX is a lead-free training ammunition for law enforcement and military users. The semi-frangible bullet with 1.7 g bullet mass consists of a bullet core (copper), which is covered by a tambead jacket, similar to a semi-jacketed bullet. The exposed bullet core and the optimized bullet geometry reduce the risk of ricochet to a minimum, as the bullet disintegrates almost completely on impact with a target. Due to the combination with the SINTOX® primer, the cartridge is also ideal for indoor shooting and training ranges.



4.6x30 SEMI FRANGIBLE 5X

<b>bullet</b>	206 core: 1.7 g / 24 g	<b>Term of Use/Storage</b>	Refrigerated Transport in Drybox
<b>bullet material</b>	pressed copper bullet core centered / Tomato (copper)	<b>Temperature Range</b>	-40°C to +40°C
<b>Primer / Propellant powder</b>	1870 X / Double based Nitrocellulose powder	<b>Max. chamber pressure</b>	4400 bar (613)
<b>Case material</b>	Brass	<b>Velocity <math>V_M</math> / Energy</b>	630 m/s (2066 fps) / 440 J / 180 mm Barrel
<b>Cartridge weight</b>	approx. 6.3 g	<b>Accuracy at 50 m</b>	$a_2 \leq 40$ mm, 30 Cart., 180 mm Barrel
<b>Net explosive weight</b>	approx. 0.6 g	<b>Packaging / Weight</b>	40pcs. Folding Box / approx. 0.3 kg 1920pcs. M2A1 Metal Box/approx. 15.6kg
<b>Item No. 230-01-06</b>			

**4.6mmx30 DM21 SOFT CORE**

Bullet	Full metal jacket 2.6 g / 40 gr
Bullet material	Lead Steel (tombac-plated)
Primer	SINTOX®
Propellant powder	Double based Nitrocellulose powder
Case material	BRASS
Cartridge weight	approx. 6.9 g
Net explosive weight	approx. 0.6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	max 4000 bar (21°C)
Velocity $v_{10}$ / Energy	612 m/s 2008 Jps / 487 J / 180 mm Barrel
Accuracy at 100 m	$\pm 30$ mm, 30 Cart / 180 mm Barrel
Packaging / Weight	40pcs. Folding Box / approx. 0.3 kg 3200pcs. Wooden crate / approx. 30 kg

**4.6mmx30 DM32 HARD CORE**

Bullet	Solid 2.0 g / 31 gr
Bullet material	Steel hardened coated
Primer	SINTOX®
Propellant powder	Double based Nitrocellulose powder
Case material	BRASS
Cartridge weight	approx. 6.3 g
Net explosive weight	approx. 0.6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	max 4000 bar (21°C)
Velocity $v_{10}$ / Energy	658 m/s 2195 Jps, 462 J / 180mm Barrel
Accuracy at 100 m	$\pm 30$ mm, 30 Cart. / 180mm Barrel
Penetration at 200 m	NATO CRISAT
Packaging / Weight	40pcs. Folding Box / approx. 0.3 kg 1800pcs. M2A1 Metal Box, approx. 16.7kg

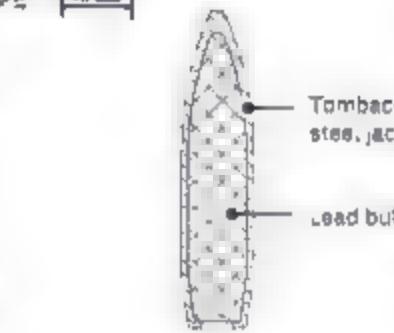
**4.6mmx30 DM21 SOFT CORE**

2.6 g / 40 gr



The full metal jacket soft core cartridge is the world's first load in 4.6x30 calibre. It was developed by RWS GmbH in close cooperation with the German firearms manufacturer Heckler & Koch. It is perfectly engineered for the polygon barrel used in the manufacturer's MP7 A2 personal defence weapon to ensure flawless functionality, even with fully automatic fire. The cartridge is equally suited to tactical use and training. Its bullet has a lead core that is completely encased in a tombac-plated steel jacket.

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**4.6mmx30 DM31 HARD CORE**

2.0 g / 31 gr



Hardened steel core, copper-coated, blackened

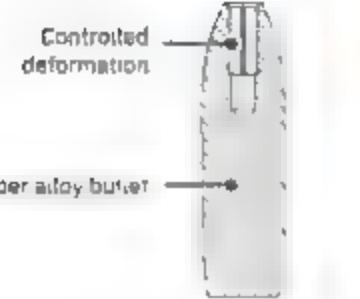
The DM31 hard-core ammunition was specially developed for penetrating modern body armour. It is used multi-functionally by the German armed forces in the MP7 submachine gun. The optimised monolithic projectile made of hardened steel, which weighs 2.0 g, is capable of effectively penetrating a NATO CRISAT target at distances of up to 200 metres. This target consists of 20 layers of Kevlar combined with a 1.6 mm thick titanium plate.

Ref. No. 231 57 71 // Ballistic data page 85



## 4.6mmx30 DM41 DEA

2.0 g / 31 gr



The low-emission tactical cartridge for special units of the German Armed Forces. The cartridge is specially adapted to the requirements of the Heckler & Koch MP7 A2 submachine gun. Its lead free bullet is highly effective against covered and uncovered soft targets. The bullet's controlled deformation enables high energy transfer to the target and minimises the risk of collateral damage at the same time. The cartridge is therefore ideally suited for tactical scenarios.

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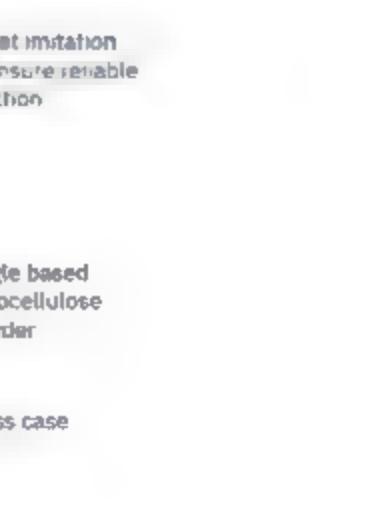
## 4.6mmx30 DM18 BLANK



The DM18 is currently the blank cartridge used by the German Armed Forces in 4.6x30 calibre. It was engineered and qualified to meet the highly technical requirements of the German Armed Forces. The cartridge is used across the board by all German military police corps and is explicitly designed for the Heckler & Koch MP7 A2 personal defence weapon to guarantee safe firearm functionality.

A suitable blank cartridge device is required to ensure that the MP7 functions properly. The blank cartridge is also completely suitable for indoor shooting ranges or training facilities.

Item No. 231 75 51

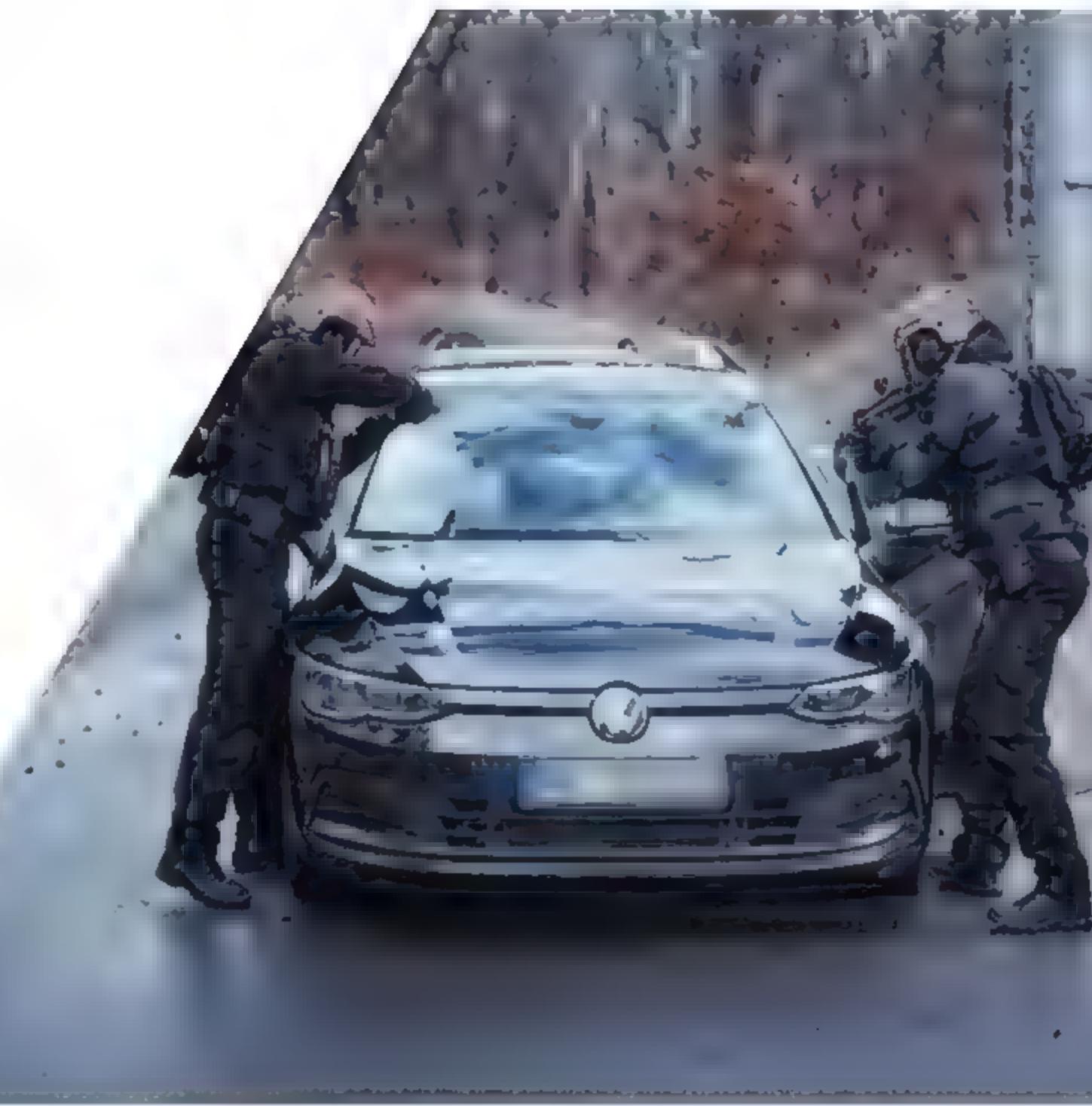


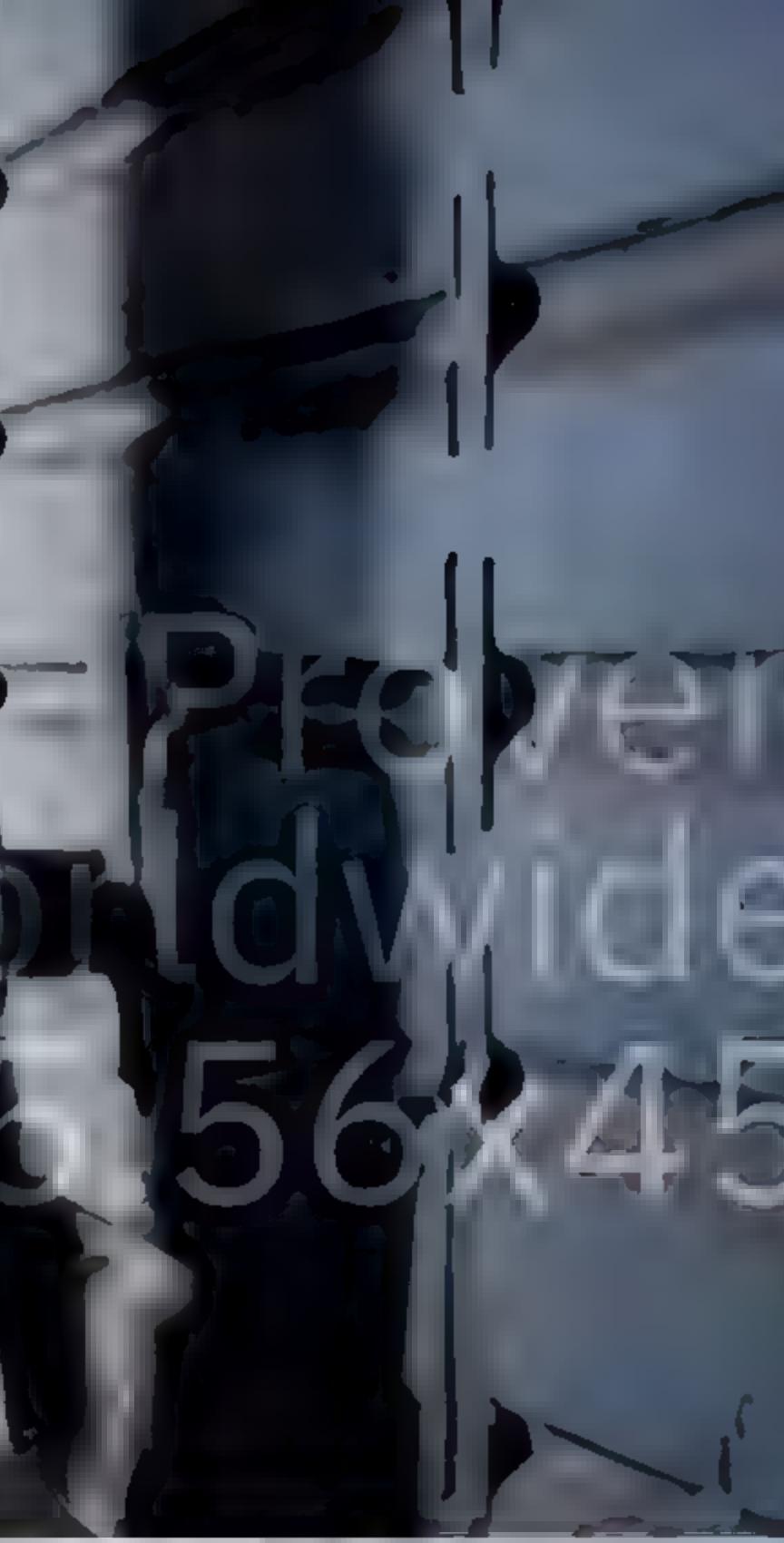
### 4.6mmx30 DM41 DEA

Bullet	Solid 2.0 g / 31 gr
Bullet material	Tombac
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 6.3 g
Net explosive weight	approx. 0.6 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-30°C to +52°C
Mean chamber pressure	max. 4000 bar, 21°C
Velocity v	678 m/s, 2224 fps
Energy	460 J, 180mm Barrel
Accuracy at 100 m	SD ≤ 30 mm, 30 Cart, 180mm Barre
Packaging / Weight	40pcs. Folding Box, approx. 0.3 kg 1800pcs. M2A1 Metal Box/approx. 15.7kg

### 4.6mmx30 DM18 BLANK

Primer	SINTOX®, Single based Nitrocellulose powder
Propellant powder	Brass
Case material	approx. 4.5g
Cartridge weight	approx. 0.3 g
Net explosive weight	Technical Terms of Delivery
Term of Reference	-20°C to +40°C
Temperature Range	max. 4000 bar, 21°C
Mean chamber pressure	40pcs. Folding Box, approx. 0.3 kg 3200pcs. Wooden crate / approx. 24 kg





Used worldwide,  
appreciated worldwide

The 5.56x45 calibre ammunition is suitable for assault rifles and light machine guns and offers above-average precision and reliability. A large number of different armed forces rely on the performance day in, day out.

RWS GmbH is particularly proud of the variety of solutions in this calibre that we can offer you to fulfil your mission.

## 5.56x45 LF STYX ACTION SX

3.7 g / 57 gr



The 5.56x45 LF Styx SX cartridge is designed for special situations. It is characterized by its excellent deformation in a wide velocity range and therefore guarantees high energy transfer in the target as well as a low background risk. The LF STYX SX is also safe and reliable at longer ranges.

The lead-free copper bullet deforms into six flags on impact, which remain fixed to the bullet body and thus facilitate wound treatment. Suitable for semi-automatic and fully automatic weapons and for different barrel lengths without restrictions.



### 5.56x45 LF STYX ACTION

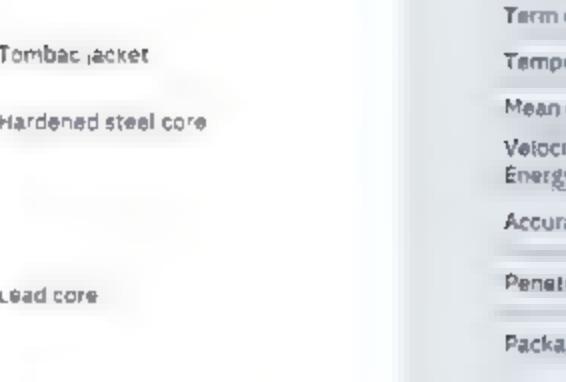
Bullet	Round 3.7 g / 57 gr
Bullet material	Copper
Driver	BRNTDAR /
Propellant powder	Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.5 g
Net explosive weight	approx. 2.8 g

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Form of friction	Ballistic Items of Germany
Temperature Range	-54°C to +52°C
Mean chamber pressure	4450 bar (23°C)
Velocity V <sub>20</sub> / Energy	920 m/s (3010 ft/s) / 1886 J / 1450 m²/s
Accuracy 41250 m	± 1.25 mm / 30 cm L
Packaging / Weight	30pcs. Folding Box / approx. 6.4 kg 900pcs. Cardboard Box / approx. 12 kg

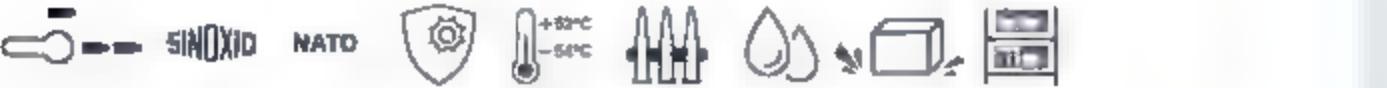
## 5.56x45 NATO BALL

4.0 g / 62 gr (SS109)



The 5.56x45 NATO Ball is the standard tact cal military cartridge for the NATO alliance and its partners. It is engineered for flawless functionality in all NATO-approved standard firearms.

The bullet design corresponds to the SS109 and M855 bullet types and consists of two bullet cores with a tail cover, with a hardened steel front core and a lead rear core. SINOXID primer technology is used for the load to guarantee reliable ignition even under the most adverse conditions. A REACH-compliant nitrocellulose powder (two-base) is used as the propellant, which enables effective use of the cartridge in a temperature range from -54°C to +52°C. It is also waterproof and fully compliant with AEP-97 (M-CMOP1).



## 5.56x45 NATO BALL (SS109)

Bullet	Double-core 4.0 g / 62 gr (SS109)
Bullet material	Lead / Steel (hardened) / Tombac
Primer / Propellant powder	SINOXID® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12 g
Net explosive weight	approx. 1.8 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	max 4450 bar (21°C)
Velocity v <sub>100</sub> / Energy	920 m/s (3018 fps) / 1566 J / 508 mm Barrel
Accuracy at 300 m	8v SN ≤ 100 mm. 30 Cart 508 mm Barrel
Penetration at 570 m	3.5 mm (S235JR) / +0.5 mm Aluminium. 508 mm Barrel
Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg 870pcs. M2A1 Metal Box/approx. 13.9 kg

## 5.56x45 NATO TRACER

Bullet	Tracer 4.1 g / 63 gr
Bullet material	Lead / Steel (tombac plated) / Pyrotechnic charge
Primer / Propellant powder	SINOXID® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.2 g
Net explosive weight	approx. 2.1 g
Term of Reference	MCMOP1 / AOP 4172
Temperature Range	-54°C to +52°C
Mean chamber pressure	max 4450 bar (21°C)
Velocity v <sub>100</sub> / Energy	885 m/s (2904 fps) / 1606 J / 508 mm Barrel
Accuracy at 300 m	8v SN ≤ 160 mm. 30 Cart 508 mm Barrel
Tracer visibility	13 m to 140 m / Colt M16A2
Minimum tracer distance	≥ 600 m / Colt M16A2
Tracer colour	Red
Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg 870pcs. M2A1 Metal box /approx. 13.8 kg



## 5.56x45 NATO TRACER

4.1 g / 63 gr



The 5.56x45 NATO Tracer is the standard tact cal military tracer cartridge for the NATO alliance and its partners. Its compatibility with all NATO firearms is therefore guaranteed. Accordingly, the cartridge can be used for mission scenarios and in training. The bullet itself consists of several components: jacket, lead core, pyrotechnic charges and a cap. It has a dark tracer that conceals the shooter's position. The visible tracer begins at a range of 13 m to 140 m and illuminates up to a distance of at least 600 m. The cartridge is suitable for use in the most adverse environments and under the harshest climatic conditions in a temperature range from -54°C to +52°C. It is also fully compliant with AEP-97 (M-CMOP1).



## 5.56x45 NATO IR TRACER

4.1 g / 63 gr



The 5.56x45 NATO IR Tracer has a special tracer that can only be observed with night vision devices. It is tuned so that the shooter can follow the tracer without being dazzled. The shooter keeps the target in view. The NATO IR Tracer is a tactical instrument, especially designed for the use at night. For the shooter, the tracer burns from the muzzle up to a distance of  $\approx$  600m. When observing from the side, there is a distance between the muzzle and the infrared tracer that is not visible. This means that the firing position cannot be localised by lateral observation.



### 5.56x45 NATO IR TRACER

Bullet	Tracer 4.1 g / 63 gr
Bullet material	Lead / Steel (tombac plated) Pyrotechnic charge
Primer / Propellant powder	SINOXID® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.2 g
Net explosive weight	approx. 2.1 g

Term of Reference	MCMOPI / ADP 4172
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 4450 bar (21°C)
Velocity v...	885 m/s (2904 ips)
Energy	1606 J / 508 mm Barrel
Accuracy at 300 m	54 SH $\pm$ 160 mm 508 mm Barrel
Minimum tracer distance	600 m / M16A2
Packaging	30pcs. Folding Box / approx. 0.4 kg 870pcs. M241 Metal box / approx. 13.8 kg

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## 5.56x45 BLANK



The 5.56x45 BLANK is engineered for military training and simulation scenarios. It is intended in particular for use in the area of force-on-force training. It is equally compatible with semi-automatic and fully automatic firearms.

A suitable manoeuvre cartridge device is required to ensure that the firearm functions properly. The heavy metal-free SINTOX primer and REACH-compliant propellant powder minimise the user's exposure to harmful substances. With the applied sealing in the imitation bullet (lacquer) and the ring joint of the primer cap (ring joint lacquer), it guarantees safe functionality even under the most adverse circumstances such as strong fluctuations in temperature and weather conditions.

Item No. 243 12 21



## 5.56x45 BLANK

Primer / Propellant powder	SINOXID® / Single-base Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 8.0 g
Net explosive weight	approx. 1.8 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-20°C to +40°C
Mean chamber pressure	max. 4050 bar (21°C)
Packaging / Weight	30pcs. Folding Box / approx. 0.25 kg 900pcs. M2A1 Metal box, approx. 10kg



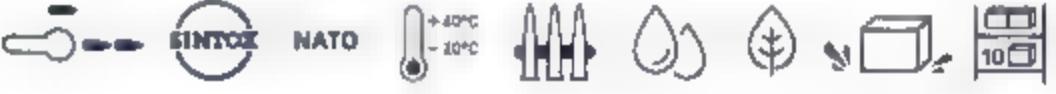
## 5.56mmx45 DM18A1 BLANK



The 5.56x45 DM18A1 blank cartridge is engineered for training and simulation scenarios in the German Armed Forces. It was specially developed for the G36 assault rifles, but is also compatible with all introduced semi-automatic and fully automatic weapons in 5.56x45 calibre. A suitable blank cartridge device is required to ensure that the firearm functions properly.

The heavy metal-free SINTOX primer and REACH-compliant propellant powder minimise the user's exposure to harmful substances. With the applied sealing in the imitation bullet (lacquer) and the ring joint of the primer cap (ring joint lacquer), it guarantees safe functionality even under the most adverse circumstances such as strong fluctuations in temperature and weather conditions.

Item No. 242 89 17

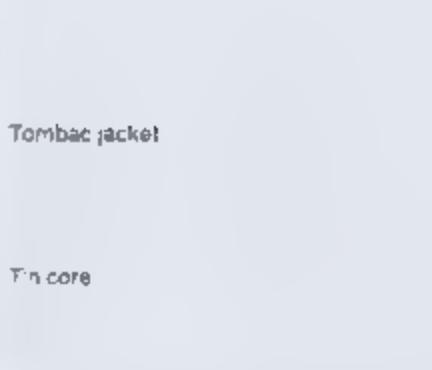


## 5.56mmx45 DM18 BLANK

Primer / Propellant powder	SINTOX® / Single-base Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 8.0 g
Net explosive weight	approx. 0.5 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-20°C to +40°C
Mean chamber pressure	max. 4050 bar (21°C)
Packaging / Weight	30pcs. Folding Box / approx. 0.25 kg 1800pcs. Wooden crate / approx. 19 kg

## 5.56x45 TRAINING HV SX

4.0 g / 62 gr



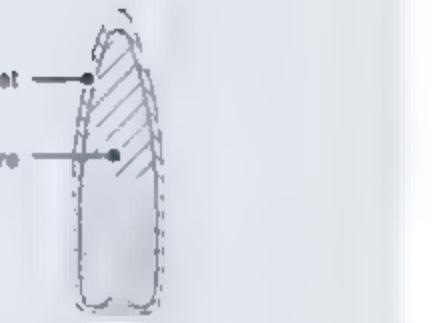
The 5.56x45 TRAINING HV SX is a lead free training cartridge for law enforcement and military users. The semi jacket bullet weighing 4.0 g has a tin core encased in a tombac jacket. The exposed projectile core and optimised projectile geometry minimise the risk of ricochets. The cartridge is also ideal for enclosed shooting and training facilities thanks to the combination of SINTOX primer and REACH-compliant propellant powder.



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## 5.56x45 FMJ

3.56 g / 55 gr (M193)



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## 6.56x46 TRAINING HV SX

Bullet	Jacket soft core 4.0 g / 62 gr
Bullet material	Tin / Tombac
Primer /	SINTOX® /
Propellant powder	Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.4 g
Net explosive weight	approx. 1.8 g
Term of Reference	Technical Terms of Delivery
Temperature Range	20°C to +40°C
Mean chamber pressure	max. 4000 bar (21°C)
Velocity v /	850 m/s (2788 ips)
Energy	1445 J / 508 mm Barrel
Accuracy at 100 m	$E_d \leq 35 \text{ mm}$ 30 Cart 500m/100m
Packaging / Weight	30pces. Folding Box / approx. 0.4 kg 900pces. Cardboard Box / approx. 11,5 kg

## 5.56x46 FMJ (M193)

	Full Metal Jacket 3.56 g / 55 gr
Bullet material	Lead / Tombac
Primer	SINTOX®
Propellant powder	Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12 g
Net explosive weight	approx. 1.8 g
Term of Reference	MCMOP1 / AOP 4172
Temperature Range	54°C to +52°C
Mean chamber pressure	max. 4050 bar (21°C)
Velocity v /	990 m/s (3248 ips)
Energy	1.765 J / 508 mm Barrel (12" twist)
Accuracy at 300m	$S_1, S_2 \leq 85 \text{ mm}$ 30 Cart 508 mm Barrel
Packaging / Weight	30pces. Folding Box / approx. 0.4 kg 900pces. M2A1 Metal box/ approx. 13,8 kg



## 5.56mmx45 DM41A1 SOFT CORE

4.0 g / 62 gr



The 5.56x45 DM41A1 is a cartridge exclusively used by the German Armed Forces. It was engineered for both tactical use and training according to the technical requirements of BAAINBw (Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support).

The cartridge consists of a fully encapsulated full metal jacket soft core with a bullet weight of 4.0 g. It reduces pollutant emissions to an absolute minimum in combination with the patented heavy metal-free SINTOX® primer.



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### 5.56mmx45 DM21A1

Tracer 4.1 g / 63 gr

Bullet	Tracer 4.1 g / 63 gr	Term of Reference	Technical Terms of Delivery
Bullet material	Lead / Steel (tombac- and tin-plated) / Pyrotechnic charge	Temperature Range	-54°C to +63°C
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder	Mean chamber pressure	max. 4450 bar (21°C)
Case material	Brass	Velocity $V_{20}$ / Energy	> 880 m/s (2887 fpe) / 1649 J / 508 mm Barrel
Cartridge weight	approx. 12.2 g	Accuracy at 100 m	8.5 / 35 mm, 30 Cart. / 508 mm Barrel
Net explosive weight	approx. 2.1 g	Penetration at 507 m	3.5 mm S250R + 0.5 mm Aluminium / 508 mm Barrel
Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg / 180pcs. Wooden crate / approx. 29 kg	Tracer visibility	13 m to 140 m / Heckler & Koch G36

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## 5.56mmx45 DM21A1 SOFT CORE TRACER

4.1 g / 63 gr



The 5.56x45 DM21A1 is the standard tactical cartridge used by the German Armed Forces. Its compatibility with all NATO firearms is guaranteed. The cartridge can be used for mission scenarios and in training.

The bullet itself consists of several components: jacket, lead core, pyrotechnic charges and a cap. It has a dark tracer that conceals the shooter's position. The visible tracer begins at a range of 13 m to 140 m and illuminates up to a distance of at least 600 m. The cartridge is suitable for use in the most adverse environments and under the harshest climatic conditions in a temperature range from -54°C to +63°C. It is also fully compliant with AEP-97 (M-CMOP).

### 5.56mmx45 DM11A1

Bullet	Double core 4.0 g / 62 gr
Bullet material	Lead / Steel (tombac- and tin-plated) / Pyrotechnic charge
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 11.9 g
Net explosive weight	approx. 1.8 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +63°C
Mean chamber pressure	max. 450 bar (21°C)
Velocity $V_{20}$ / Energy	> 880 m/s (2887 fpe) / 1649 J / 508 mm Barrel
Accuracy at 100 m	8.5 / 32 mm, 30 Cart. / 508 mm Barrel
Penetration at 507 m	3.5 mm S250R + 0.5 mm Aluminium / 508 mm Barrel
Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg / 180pcs. Wooden crate / approx. 29 kg

### 5.56mmx45 DM41A1

Bullet	Full metal jacket 4.0 g / 62 gr
Bullet material	Lead / Tombac / Steel (coated)
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.2 g
Net explosive weight	approx. 1.8 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +63°C
Mean chamber pressure	max. 450 bar (21°C)
Velocity $V_{20}$ / Energy	> 880 m/s (2887 fpe) / 1649 J / 508 mm Barrel
Accuracy at 100 m	8.5 / 35 mm, 30 Cart. / 508 mm Barrel
Penetration at 507 m	3.5 mm S250R + 0.5 mm Aluminium / 508 mm Barrel
Packaging / Weight	30pcs. Folding Box / approx. 0.4 kg / 180pcs. Wooden crate / approx. 29 kg



## Versatility in use

The 7.62x51 cartridge is NATO's oldest long rifle cartridge. Since the end of the 1950s arms worldwide have relied on this standard cartridge. This cartridge covers almost all infantry applications - from assault rifles to precision rifles.

The cartridge has been developed over the decades in application. Today, in addition to standard ammunition types specifically developed products for training, deployment and special use are available from the armour-piercing, precision, silent to the reduced pollution variants. In addition, everything is available in cartridge 7.62x51.



## 7.62x51 NATO BALL

9.45 g / 146 gr (M80)



The NATO Ball is the standard 7.62x51 calibre tactical cartridge for many military users. It is engineered for flawless functionality in all NATO-approved standard firearms and can be used just as effectively for mission and training purposes.

The projectile design is equivalent to the M80 bullet type with a weight of 9.45 g. It consists of a lead core, encased in a full metal jacket. It functions flawlessly in a temperature range from -54°C to +52°C. The cartridge is sealed to prevent the ingress of water or moisture and is fully compliant with the requirements of AEP-97 (M-CMOP).



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### 7.62x51 NATO BALL

Bullet	Full Metal Jacket 9.45 g / 146 gr
Bullet material	Lead / Steel (tombac-plated)
Primer / Propellant powder	SINOXID® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 24 g
Net explosive weight	approx. 2.9 g
Term of Reference	MCMOP1 AOP-2310
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 4450 bar (21°C)
Velocity $v_{10}$ / Energy	> 820 m/s (2690 fps) / 3177 J / 562 mm Barrel
Accuracy at 485 m	8x 8x ≤ 176 mm, 30 Cart 562 mm Barrel
Penetration at 550 m	3.5mm SR235JR
Packaging / Weight	20pcs. Folding Box / approx. 0.5 kg 500pcs. M2A1 Metal box / approx. 17 kg

### 7.62x51 NATO TRACER (M62)

Bullet	Tracer 9.1 g / 140 gr
Bullet material	Lead / Steel (tombac plated) Pyrotechnic charges
Primer	SINOXID®
Propellant	Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 24.0 g
Net explosive weight	approx. 3.4 g
Term of Reference	MCMOP1 AOP 2310
Temperature Range	-54°C to +52°C
Mean chamber pressure	max. 4450 bar (21°C)
Velocity $v_{10}$ / Energy	>839 m/s (2690 fps) / 3059 J / 562 mm Barrel
Accuracy at 485 m	8x 8x ≤ 265 mm, 30 Cart 562 mm Barrel
Tracer visibility	13 m to 140 m
Minimum tracer distance	≥ 775m
Tracer colour	Red
Packaging / Weight	20pcs. Folding Box / approx. 0.5 kg 500pcs. M2A1 Metal box/approx. 15.2 kg

## 7.62x51 NATO TRACER

9.1 g / 140 gr (M62)



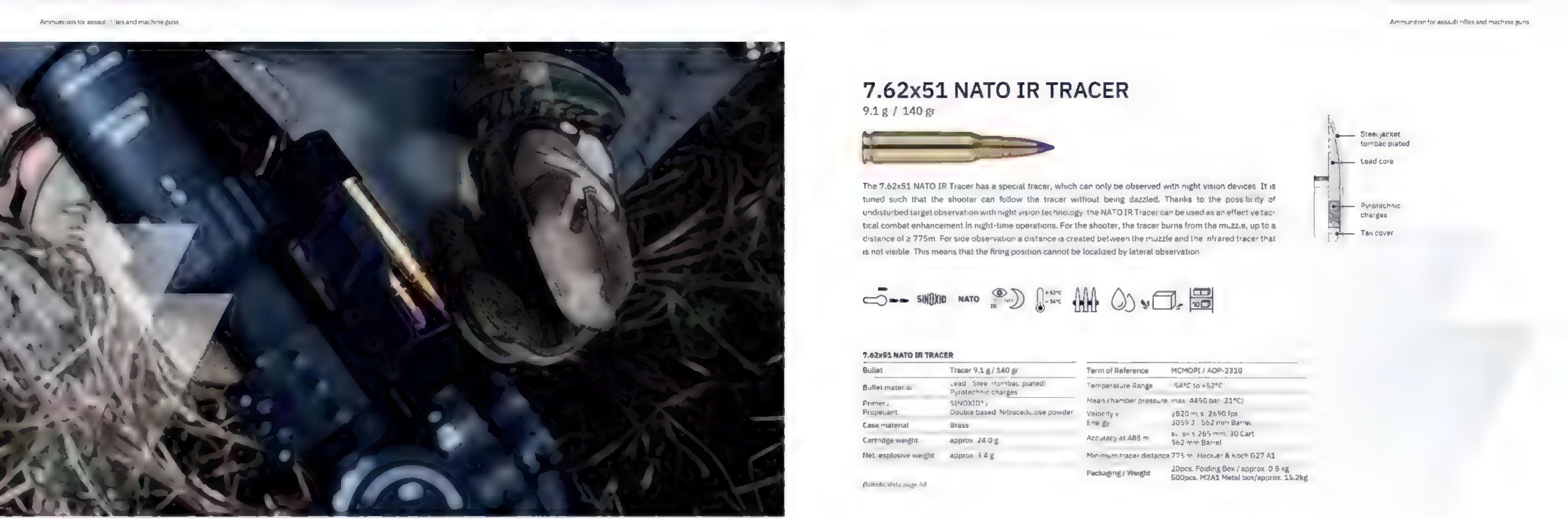
The 7.62x51 NATO Tracer cartridge is engineered for military use. Its compatibility with all NATO firearms is guaranteed. The cartridge can therefore be used for mission scenarios and in training. The bullet consists of a lead core, bullet jacket and the pyrotechnic charge inserted in the tail.

It has a dark tracer that conceals the shooter's position. The visible tracer begins at a range of 13 m to 140 m and illuminates up to a distance of at least 775 m. The visible pyrotechnic charge glows red. The cartridge is fully compliant with AEP-97 (M-CMOP).



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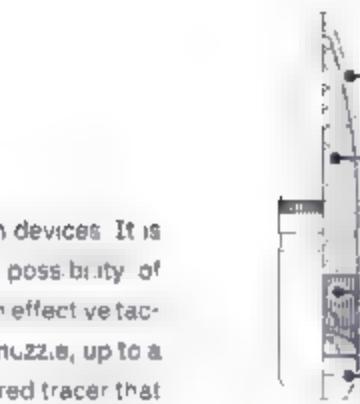


## 7.62x51 NATO IR TRACER

9.1 g / 140 gr



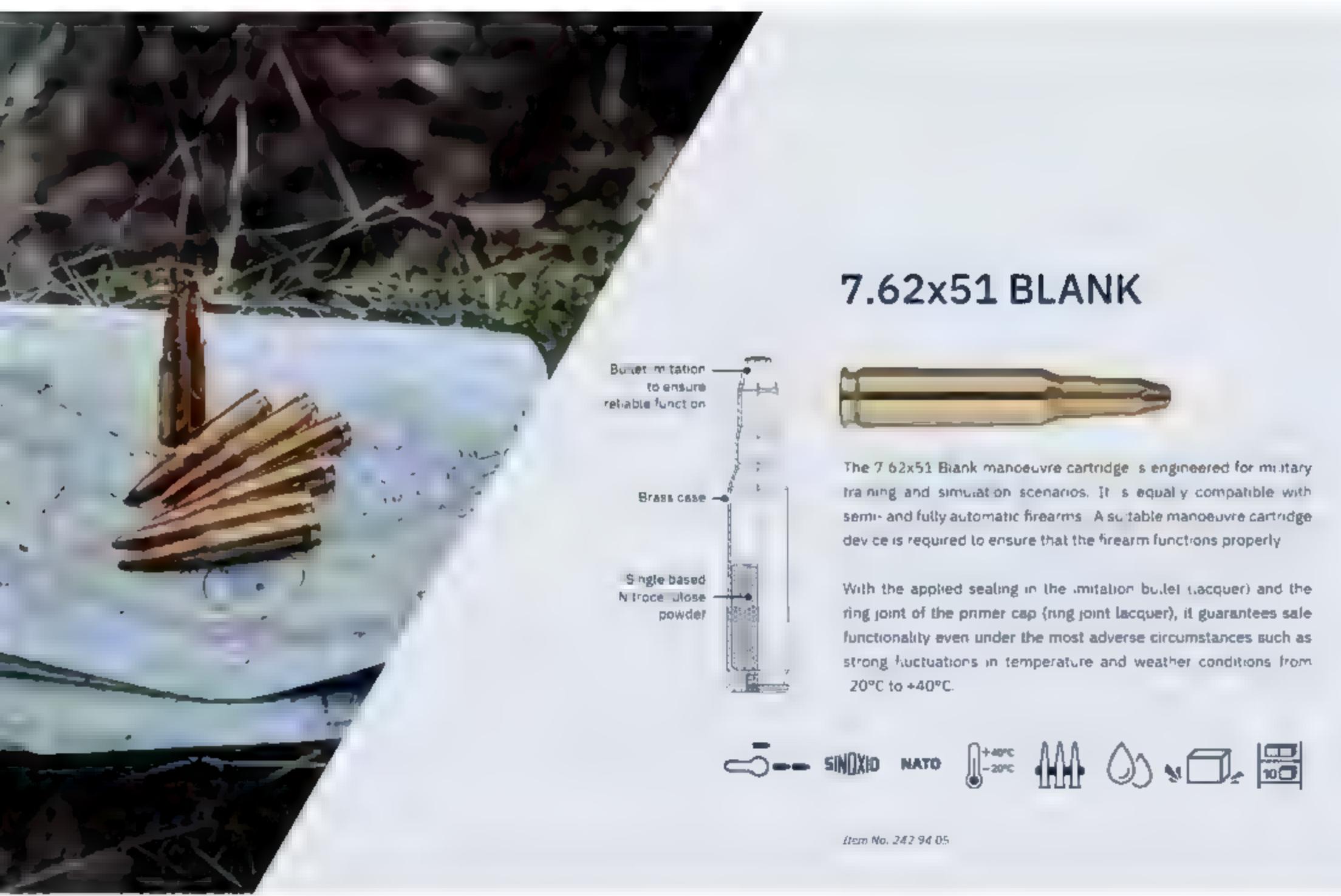
The 7.62x51 NATO IR Tracer has a special tracer, which can only be observed with night vision devices. It is tuned such that the shooter can follow the tracer without being dazzled. Thanks to the possibility of undisturbed target observation with night vision technology, the NATO IR Tracer can be used as an effective tactical combat enhancement in night-time operations. For the shooter, the tracer burns from the muzzle, up to a distance of  $\approx$  775m. For side observation a distance is created between the muzzle and the infrared tracer that is not visible. This means that the firing position cannot be localized by lateral observation.



### 7.62x51 NATO TRACER

Bullet	Tracer 9.1 g / 140 gr	Term of Reference	MCMOP1 / ADP-2310
Bullet material	Lead Steel (tombac plated) Pyrotechnic charges	Temperature Range	-54°C to +52°C
Primer, Propellant	SINOXID*, Double based Nitrocellulose powder	Mean chamber pressure	max. 4450 bar, 21°C
Case material	Brass	Velocity	2820 m/s, 2690 ips
Cartridge weight	approx. 24.0 g	Energy	3059 J, 562 mm Barrel
Net explosive weight	approx. 3.4 g	Accuracy at 485 m	3.5 m, sh.s 265 mm, 30 Cart 562 mm Barrel
		Minimum tracer distance	775 m, Heckler & Koch G27 A1
		Packaging / Weight	20pcs. Folding Box / approx. 0.5 kg 500pcs. M2A1 Metal box / approx. 15.2 kg

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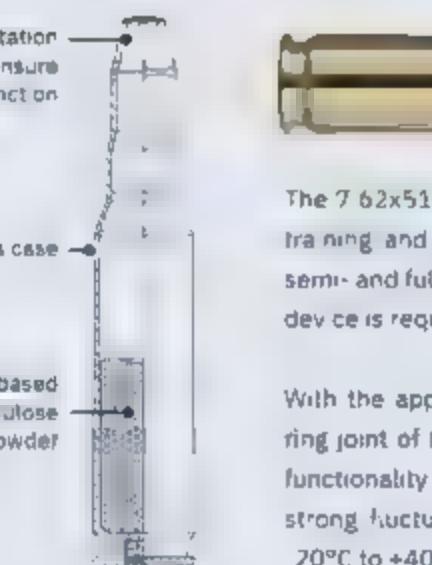
## 7.62x51 BLANK

The 7.62x51 Blank manoeuvre cartridge is engineered for military training and simulation scenarios. It is equally compatible with semi- and fully automatic firearms. A suitable manoeuvre cartridge device is required to ensure that the firearm functions properly.

With the applied sealing in the imitation bullet (lacquer) and the ring joint of the primer cap (ring joint lacquer), it guarantees safe functionality even under the most adverse circumstances such as strong fluctuations in temperature and weather conditions from -20°C to +40°C.

**Item No. 242 94 05**

**SINTOX** **NATO**  



The 7.62x51 Blank manoeuvre cartridge is engineered for military training and simulation scenarios. It is equally compatible with semi- and fully automatic firearms. A suitable manoeuvre cartridge device is required to ensure that the firearm functions properly.

With the applied sealing in the imitation bullet (lacquer) and the ring joint of the primer cap (ring joint lacquer), it guarantees safe functionality even under the most adverse circumstances such as strong fluctuations in temperature and weather conditions from -20°C to +40°C.

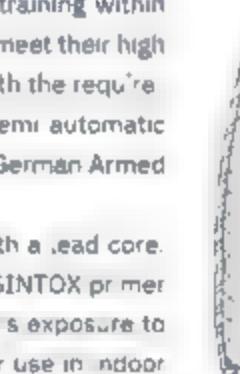
## 7.62mmx51 DM111A2 SOFT CORE

9.55 g / 147 gr



The DM111A2 is the standard cartridge for tactical use and training within the German Armed Forces. It was engineered and qualified to meet their high technical requirements. The product is also fully compliant with the requirements of AEP 97 (M CMOP). It is fully compatible with all semi-automatic and fully automatic weapons in this calibre introduced by the German Armed Forces.

It uses a completely encapsulated full metal jacket bullet with a lead core. The bullet jacket is made of tin plated, tombac plated steel. SINTOX primer technology and a fully encapsulated bullet minimise the user's exposure to harmful emissions. The cartridge is therefore also suitable for use in indoor facilities.



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7.62x51 BLANK	
Primer /	SINTOX® /
Propellant powder	Single-based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 1.3 g
Net explosive weight	approx. 0.9 g
Term of Reference	Technical Term of Delivery
Temperature Range	-20°C to +40°C
Mean chamber pressure	max. 199 bar (21°C)
Packaging / Weight	200cs Folding Box approx. 3.0 kg 5000cs MA1 Metal box approx. 19.7 kg

7.62mmx51 DM111A2	
Bullet	Full Metal Jacket 9.55 g / 147 gr
Bullet material	Lead Steelform and tin plated
Primer /	SINTOX® /
Propellant	Double-based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 2.45 g
Net explosive weight	approx. 2.0 g
Term of Reference	Technical Term of Delivery
Temperature Range	-54°C to +60°C
Mean chamber pressure	max. 450 bar (21°C)
Velocity /	> 802 m/s (31.1 ips) / 2921 m / sec
Energy	5.6 mm 30 Cal 5.6 mm 30 Cal
Accuracy at 100 m	3.5 mm 30 Cal 3.5 mm 30 Cal
Penetration at 550 m	3.5 mm SP25 J.R
Packaging / Weight	200cs Folding Box approx. 3.0 kg 10000cs Metal box approx. 19.7 kg

## 7.62mmx51 DM21A3

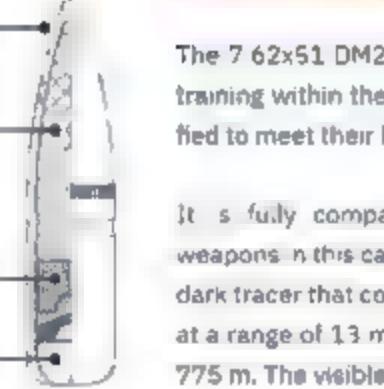
Bullet	Tracer 9.1 g / 140 gr
Bullet material	Lead / Steel (tombac- and tin-plated)
Pyrotechnic charges	
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 24.0 g
Net explosive weight	approx. 3.3 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +63°C
Mean chamber pressure	max. 4450 bar (21°C)
Velocity v <sub>0</sub>	> 802 m/s 2631 fps
Energy	2926 J 562 mm Barre
Accuracy at 100m	5, 5 35 mm, 562 mm Barre
Tracer visibility	13 m - 140 m
Minimum tracer distance	775 m
Trace burning time min.	1.6 s
Tracer colour	Red
Packaging / Weight	20pcs. Folding Box / approx. 0.5 kg 1000pcs. Wooden crate / approx. 30.8 kg

## 7.62mmx51 DM68A1

Primer	SINTOX® /
Propellant powder	Single based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 13.2 g
Net explosive weight	approx. 0.9 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-20°C to +40°C
Mean chamber pressure	max. 1090 bar (21°C)
Packaging / Weight	20pcs. Folding Box / approx. 0.3 kg 1000pcs. Wooden crate / approx. 15 kg

7.62mmx51 DM21A3  
SOFT CORE TRACER

9.1 g / 140 gr



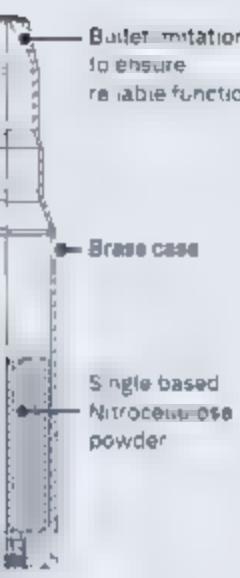
The 7.62x51 DM21A3 is the standard tracer round for tactical use and training within the German Armed Forces. It was engineered and qualified to meet their high technical requirements.

It is fully compatible with all semi-automatic and fully automatic weapons in this calibre introduced by the German Armed Forces. It has a dark tracer that conceals the shooter's position. The visible tracer begins at a range of 13 m to 140 m and illuminates up to a distance of at least 775 m. The visible pyrotechnic charge glows red.



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## 7.62mmx51 DM68A1

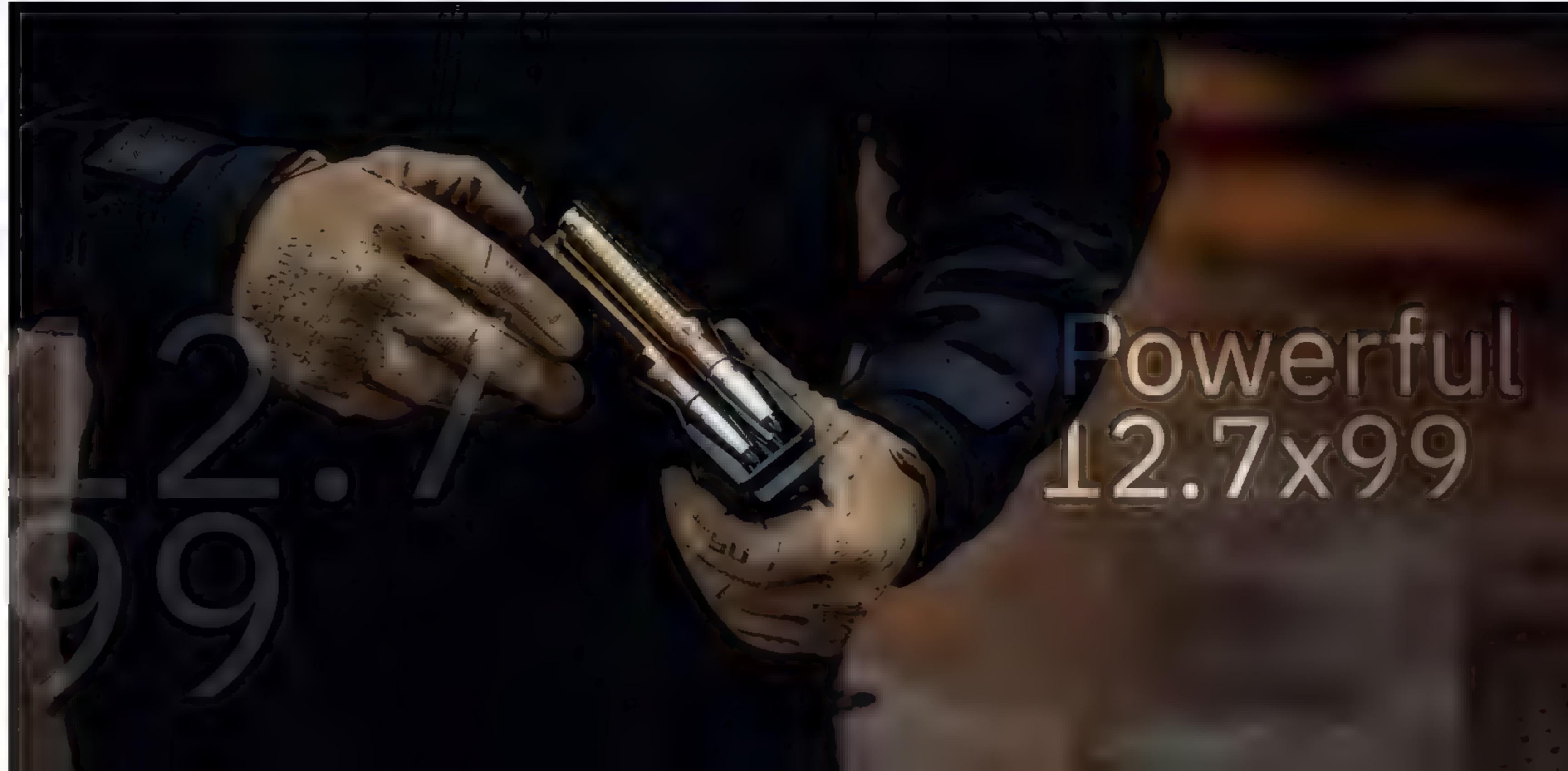


The DM68 is the standard manoeuvre cartridge for training and simulation scenarios within the Bundeswehr. It was engineered and qualified to meet their high technical requirements of the German Armed Forces. It is equally compatible with semi-automatic and automatic firearms. A suitable manoeuvre cartridge device is required to ensure that the firearm functions properly.



Item No. 242 73 82

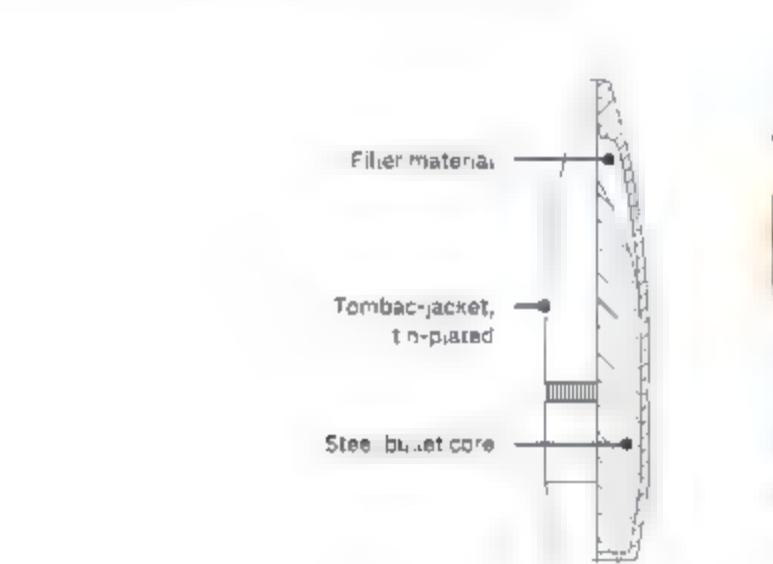




# Powerful 12.7x99

Since its invention, the 12.7x99 cartridge has impressed military users with its ability to penetrate hard targets and its long operational range. No other cartridge in the world is as associated with a machine gun as the 12.7x99 is with the BMG. Whereby the BMG stands for Browning (invention) Machine Gun.

Our ammunition for this cartridge is characterised by outstanding precision and exceptional reliability even under the most adverse conditions. In addition our solutions are equipped with our state-of-the-art semi-end-to-end metal-free SINOD® primer.



## 12.7x99 LF BALL SX

42.5 g / 656 gr



The 12.7x99 LF Ball SX is a lead-free and low-emission load that is engineered for military users. The bullet is based on a steel core, which is completely encased in a tombac jacket. The sheath itself is also tin-plated. The cartridge is intended for use in heavy machine guns such as the Browning M2. It describes the same trajectory as the 12.7x99 LF Tracer SX, which is also available.



### 12.7x99 LF BALL SX

Bullet	Full Metal Jacket 42.5 g / 656 gr
Bullet material	Steel / Tombac (coated) / Filler material
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 116.0 g
Net. explosive weight	approx. 17g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	≤ 4500 bar (21°C)
Velocity $v_{50}$ / Energy	890 m/s (2920 fps) / 16832 J / 1143 mm Barrel
Accuracy at 485 m	$s_v = 265 \text{ mm} / s_H \leq 265 \text{ mm}$ 1143 mm Barrel
Packaging / Weight	M2A1 Metal Box

## 12.7x99 LF IR TRACER SX

40.5 g / 625 gr



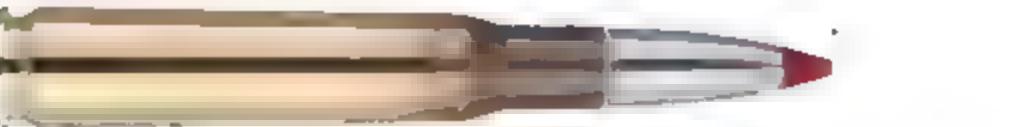
The 12.7x99 LF IR Tracer SX is the next generation of lead-free tracer ammunition, specifically developed for use in difficult lighting conditions. Our Tracer is only visible in bright sunlight and offers decisive advantages in the dark.

For the shooter, the tracer burns from the muzzle. When observing from the side, there is a distance between the muzzle and the infrared tracer that is not visible. This means that the firing position cannot be located by lateral observation. Due to the possibility of undisturbed target observation with night vision technology, the LF IR TRACER SX can be used as an effective combat enhancement in night operations. The projectile consists of three separate components. A projectile jacket with a soft iron core and a pyrotechnic charge is inserted into it.

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## 12.7x99 LF TRACER SX

40.5 g / 625 gr



The 12.7x99 LF Tracer SX was designed and developed for military users. It is fully compatible with heavy machine guns. The cartridge can therefore be used for operational scenarios and in training.

A bullet jacket with a soft iron core and a pyrotechnic charge is inserted into it. It has a dark tracer that conceals the shooter's position. The visible tracer starts at a range of 0 m to 200 m and illuminates up to a distance of at least 1,500 m.



\* Image 75% of original size // Ballistic data page 90

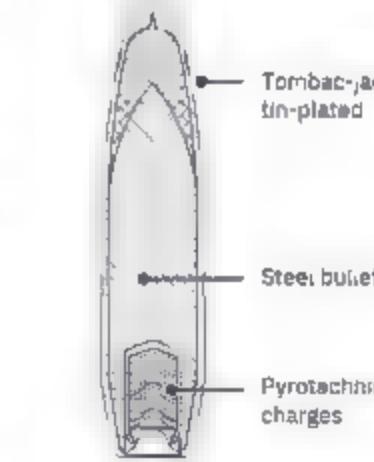
### 12.7x99 LF TRACER SX

Bullet	Tracer 40.5 g / 625 gr
Bullet material	Steel (coated) / Tombac (tin-plated) / Filler material / Pyrotechnic charge
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 113.0 g
Net. explosive weight	approx. 16.5 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	≤ 4500 bar (21°C)
Velocity $v_{50}$ / Energy	890 m/s (2920 fps) / 16040 J / 1143 mm Barrel
Accuracy at 485 m	$s_v = 353 \text{ mm} / s_H \leq 353 \text{ mm}$ 1143 mm Barrel
Minimum tracer distance	1500 m
Tracer colour	Red
Packaging / Weight	10pcs. Folding Box/ approx. 1.2 kg 100pcs. M2A1 Metal box / approx. 15.2kg

## 12.7x99 LF IR TRACER SX

Tracer 40.5 g / 625 gr

Bullet	Tracer 40.5 g / 625 gr
Bullet material	Steel (coated) / Tombac (tin-plated) / Filler material / Pyrotechnic charge
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 113.0 g
Net. explosive weight	approx. 16.5 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	≤ 4500 bar (21°C)
Velocity $v_{50}$ / Energy	890 m/s (2920 fps) / 16040 J / 1143 mm Barrel
Accuracy at 485 m	$s_v = 353 \text{ mm} / s_H \leq 353 \text{ mm}$ 1143 mm Barrel
Minimum tracer distance	1500 m
Packaging / Weight	M2A1 Metal box



**12.7x99 HC SX**

47.5 g / 733 g



The 12.7x99 HC SX tact cal cartridge is designed for military use. It is designed for use with repeater rifles and semi-automatic firearms for precision shooters and snipers. It has a hard core bullet consisting of a hardened steel core with a jacket. This guarantees utterly reliable effectiveness against hard targets.

The cartridge can be used without restriction in a temperature range from -54°C to +52°C. It is also sealed against the ingress of water and moisture. The use of components without lead or heavy metals minimises exposure.

**12.7x99 HC SX**

Bullet	Full Metal Jacket 47.5 g / 733 gr
Bullet material	Steel (zinc-plated) / Tombac (zinc-plated)
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 122 g
Net explosive weight	approx. 17 g

Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +52°C
Mean chamber pressure	≤ 4500 bar (21°C)
Velocity $v_{10}$ / Energy	895 m/s (2936 fps) / 19024 J / 1143 mm Barrel
Accuracy at 300 m	Sy 4H ≤ 75 mm, 3x10 Cart 1143 mm Barrel
Penetration at 100 m	18 mm Armour steel RHA 1143 mm Barrel
Packaging / Weight	10pcs. Folding Box / approx. 1.2 kg 100pcs. M2A1 Metal Box / approx. 15.7 kg

\* Image 75% of original size // Ballistic data page 91

**12.7x99 SR SOLID SX**

45.2 g / 698 gr



The 12.7x99 SR Solid SX is a lead-free training and duty cartridge for law enforcement and military users. The twisted lead-free brass bullet has a special bullet geometry that greatly increases the air resistance of the bullet in flight. As a result, the danger zone and the maximum flight range can be reduced to 3.8 km. A corresponding weapon function from heavy machine guns of the FN Browning M2 type is guaranteed.

**12.7x99 SR SOLID SX**

Bullet Solid, 45.2 g / 698 gr

Bullet material	Brass
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 124.4 g
Net explosive weight	approx. 16 g

Term of Reference

Temperature Range

Mean chamber pressure

Velocity  $v_{10}$  / Energy

Max. range

Accuracy at 300 m

Penetration at 100 m

Packaging / Weight

Technical Terms of Delivery

-54°C to +52°C

≤ 4500 bar (21°C)

872 m/s (2661 fps) / 17185 J / 1143 mm Barrel

≤ 3800m

Sx: Sy ≤ 90 mm / 1143 mm Barrel

120pcs. M2A1 Metal Box / approx. 16.8 kg



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## 12.7x99 SR SOLID TRACER SX

45.8 g / 707 gr



The 12.7 SR Solid Tracer SX is a lead-free training and tactical cartridge for military users. The lead-free bullet made of turned brass has a special bullet geometry that greatly increases the air resistance in flight.

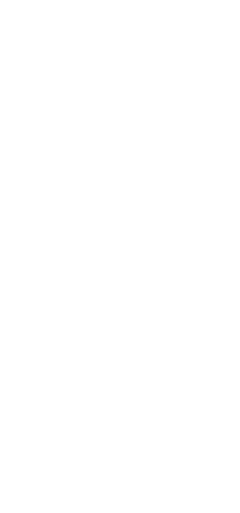
The pyrotechnic charge has a dark grain on tracer that conceals the shooter's position. The visible tracer begins at a range of 0 m to 200 m and illuminates up to a distance of at least 1,000 m, reducing the danger zone and the maximum flight range to 4.0 km. It is fully compatible with heavy machine guns of the FN Browning M2 type.



### 12.7x99 SR SOLID TRACER SX

Bullet	Solid with Tracer 45.8 g / 707 gr	Term of Reference	Technical Terms of Delivery
Bullet material	Brass / Steel (coated), Pyrotechnic charge	Temperature Range	-54°C to +52°C
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder	Mean chamber pressure	≤ 4500 bar (21°C)
Case material	Brass	Velocity $v_{10}$ / Energy	862 m/s (2828 fpe) 17016 J / 1143 mm Barrel
Cartridge weight	approx 125 g	Max. range	≤ 4000 m
Net explosive weight	approx 16.4 g	Accuracy at 300 m	5x 5x ≤ 110 mm / 1143 mm Barrel
		Minimum tracer distance	1000 m
		Tracer colour	Red
		Packaging / Weight	120pcs. M2A1 Metal box / approx. 16.8 kg

\* Image 75% of original size // Ballistic data page 90



## 12.7x99 SR SOLID IR TRACER SX

45.8 g / 707 gr



Our 12.7x99 SR Solid IR Tracer SX is a specially developed lead-free tracer ammunition to improve night-time shooting training. It combines the improved visual perception of IR tracer technology ammunition with the reduced trajectory range of practice ammunition. The danger zone is limited to 3.8 km. The trajectory of the projectile can only be observed with night vision devices. Training with this ammunition and NVD (Night Vision Device) is easier and offers an effective way to improve your shooting skills. The cartridge enables precise training under realistic conditions, as it is designed for use with heavy machine guns such as the FN Browning M2 or M3.



### 12.7x99 SR SOLID IR TRACER SX

Bullet	Solid with Tracer, 45.8 g / 707 gr	Term of Reference	Technical Terms of Delivery
Bullet material	Brass / Steel (coated), Pyrotechnic charge	Temperature Range	-54°C to +52°C
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder	Mean chamber pressure	≤ 4500 bar (21°C)
Case material	Brass	Velocity $v_{10}$ / Energy	862 m/s (2828 fpe) 17016 J / 1143 mm Barrel
Cartridge weight	approx 125 g	Max. range	≤ 4000 m
Net explosive weight	approx 16.5 g	Accuracy at 300 m	5x 5x ≤ 200 mm / 1143 mm Barrel
		Minimum tracer distance	1000 m
		Packaging / Weight	120pcs. M2A1 Metal box / approx. 16.8 kg

\* Image 75% of original size // Ballistic data page 90



## 12.7mmx99 DM91A1 SOFT CORE

42.5 g / 656 gr



The DM91A1 is a lead free and low-emission load that is engineered for military users. The bullet is based on a steel core, which is completely encased in a tombac jacket. The sheath itself is also tin-plated. The cartridge is intended for use in heavy machine guns such as the Browning M2 and M3. It describes the same trajectory as the 12.7x99 LF Tracer SX, which is also available.



Item No.243 01 33 // Ballistic data page 91



## 12.7mmx99 DM31A1 HARD CORE

47.5 g / 733 gr



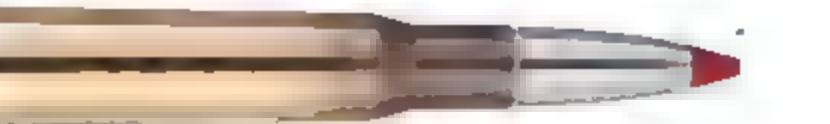
The DM31A1 is a lead-free cartridge for the German Armed Forces with enhanced penetration capabilities. It is designed for use with repeater rifles and semi-automatic firearms for precision shooters and snipers. It has a hard core bullet consisting of a hardened steel core with a gas check. This guarantees high effectiveness against hard targets. The use of components without lead or heavy metals minimises exposure.



\* Image 75% of original size Item No.241 31 47 // Ballistic data page 91

## 12.7mmx99 DM101A1 SOFT CORE TRACER

40.5 g / 625 gr



The 12.7x99 DM101A1 was designed and engineered for military users in the Bundeswehr. The cartridge has obtained full Bundeswehr qualification. It is fully compatible with heavy machine guns. The cartridge is used for mission scenarios and in training.

The bullet itself consists of several components: Steel core, jacket, filler material, pyrotechnic charge carrier with cover cap and pyrotechnic charges. It has a dark tracer that conceals the shooter's position. The visible tracer begins at a range of 0 m to 200 m and illuminates up to a distance of at least 1,500 m.



### 12.7mmx99 DM101A1

Bullet	Tracer 40.5 g / 625 gr	Temperature Range	54°C to +63°C
Bullet material	Steel/Tombac tin plated	Mean chamber pressure	max 4500 bar / 21°C
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder	Velocity	890 m/s / 2920 fps /
Case material	Brass	Energy	16040 J, 1143 mm Barre
Cartridge weight	approx. 113.0 g	Accuracy at 485 m	sv = 353 mm / sh < 353 mm / 1143 mm Barre
Net explosive weight	approx. 16.5 g	Tracer visibility	s 200 m
		Minimum tracer distance	1500 m
		Tracer colour	Red
		Packaging / Weight	10pcs. Folding Box / approx. 1.2 kg 100pcs. M2A1 Metal Box / approx. 15.2 kg

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### 12.7mmx99 DM91A1

Bullet	Full Metal jacket 42.5 g / 656 gr
Bullet material	Steel/Tombac (tin plated) / Filler material
Primer	SINTOX®
Propellant powder	Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 11.0 g
Net explosive weight	approx. 1.7 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +63°C
Mean chamber pressure	max 4500 bar / 21°C
Velocity	890 m/s (2920 fps)
Energy	16832 J, 1433 mm Barre
Accuracy at 485 m	sv = 360 mm / sh < 360 mm / 1143 mm Barre
Packaging / Weight	10 Pcs. Folding Box / approx. 1.2 kg 100 Pcs. M2A1 Metal Box / approx. 15.2 kg

### 12.7mmx99 DM31A1

Bullet	Full Metal jacket Hard core 47.5 g / 733 gr
Bullet material	Steel (tin plated) / Tombac (tin plated)
Primer / Propellant powder	SINTOX® / Double based Nitrocellulose powder
Case material	Brass
Cartridge weight	approx. 12.0 g
Net explosive weight	approx. 1.7 g
Term of Reference	Technical Terms of Delivery
Temperature Range	-54°C to +63°C
Mean chamber pressure	max 4500 bar / 21°C
Velocity	890 m/s (2920 fps)
Energy	16040 J, 1143 mm Barre
Accuracy at 485 m	sv = 353 mm / sh < 353 mm / 1143 mm Barre
Packaging / Weight	10 Pcs. Folding Box / approx. 1.2 kg 100 Pcs. M2A1 Metal Box / approx. 15.2 kg



Quality made in Switzerland - The professional SWISS P Line convinces by its technological perfection down to the smallest detail. For best accuracy in training and mission highest quality standards in materials and manufacturing processes are required. 160 years of experience, extensive know-how, expertise and modern production facilities allow us to consistently produce rounds of constant outstanding quality. These products are used by most of the world's tier and SF and police groups. Quality without compromise is what SWISS P believes in.



#### .223 Rem. SWISS P Target

Bullet type, weight HPBT 4,5 g / 69 gr

BC G1

Muzzle velocity

Term of Reference

Round for very best accuracy in training and competition



#### .223 Rem. SWISS P AP

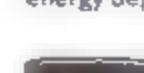
Bullet type, weight AP 4,1 g / 63 gr

BC G1

Muzzle velocity

Term of Reference

High-performance round for maximum penetration power on hard targets



#### .223 Rem. SWISS P Styx Action

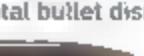
Bullet type, weight JHP 4,5 g / 69 gr

BC G1

Muzzle velocity

Term of Reference

High performance round for excellent stopping power due to instantaneous energy deposition on soft targets



#### .300 BLK SWISS P HV Ball SX

Geschoss TFMJ 9,5 g / 146 gr

BC G1

Geschwindigkeit

Referenz

Highly accurate full metal jacket round for military training and duty



#### .308 Win. SWISS P Tactical

Bullet type, weight SFNBT 10,6 g / 163 gr

BC G1

Muzzle velocity

Term of Reference

High performance round for excellent first-hit probability and terminal effect behind angled glass



#### .308 Win. SWISS P Target

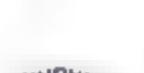
Bullet type, weight JHP 10,9 g / 168 gr

BC G1

Muzzle velocity

Term of Reference

Round for very best accuracy in training and competition



#### .308 Win. SWISS P Target

Bullet type, weight JHP 11,3 g / 175 gr

BC G1

Muzzle velocity

Term of Reference

Target round for an enhanced operator distance



#### .308 Win. SWISS P Styx Action

Bullet type, weight HPBT 10,8 g / 167 gr

BC G1

Muzzle velocity

Term of Reference

High performance round for excellent stopping power due to instantaneous energy deposition on soft targets



#### .300 BLK SWISS P HV LF Styx SX

Geschoss SHP 7,0 g / 106 gr

BC G1

Geschwindigkeit

Referenz

Lead free round for excellent stopping power due to instantaneous energy deposition on soft targets



#### .308 Lapua Mag. SWISS P AP

Bullet type, weight AP 12,7 g / 196 gr

BC G1

Muzzle velocity

Term of Reference

High-performance round for maximum penetration power on hard targets



#### .338 Lapua Mag. SWISS P Ball

Bullet type, weight FMJ 16,3 g / 231 gr

BC G1

Muzzle velocity

Term of Reference

Highly accurate full metal jacket round for military training and duty



#### .338 Lapua Mag. SWISS P Tactical

Bullet type, weight SHMST 16,2 g / 230 gr

BC G1

Muzzle velocity

Term of Reference

High performance round for excellent first-hit probability and terminal effect behind angled glass



#### .223 Rem. SWISS P Final SR

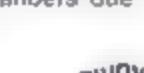
Bullet type, weight JHP 3,4 g / 52 gr

BC G1

Muzzle velocity

Term of Reference

Highly accurate fragmentation bullet for a minimized risk of over-penetration and enhanced safety for bystanders due to total bullet disintegration



#### .338 Lapua Mag. SWISS P Target

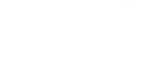
Bullet type, weight HPBT 16,2 g / 250 gr

BC G1

Muzzle velocity

Term of Reference

Round for very best accuracy in training and competition



#### .338 Lapua Mag. Swiss P Target

Bullet type, weight HPBT 19,4 g / 300 gr

BC G1

Muzzle velocity

Term of Reference

Round for very best accuracy in training and competition



#### .338 Lap. Mag. Styx Action

Bullet type, weight JHP 16 g / 247 gr

BC G1

Muzzle velocity

Term of Reference

High performance round for maximum penetration power on hard targets



#### .338 Lapua Mag. Swiss PAP

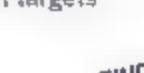
Bullet type, weight AP 16 g / 260 gr

BC G1

Muzzle velocity

Term of Reference

High-performance round for maximum penetration power on hard targets





## 12/70 ROTTWEIL MAGNUM ENTRY I

32.5 g / 502 gr



The 12/70 Magnum ENTRY I is a special shell for special police units and military users. It is designed for the forcible opening of doors by means of a shot placed next to the strike plate and/or the hinge. The shell is fully compatible with pump-action and semi-automatic shotguns. It is designed for shotguns with Magnum proofing according to C.I.P.

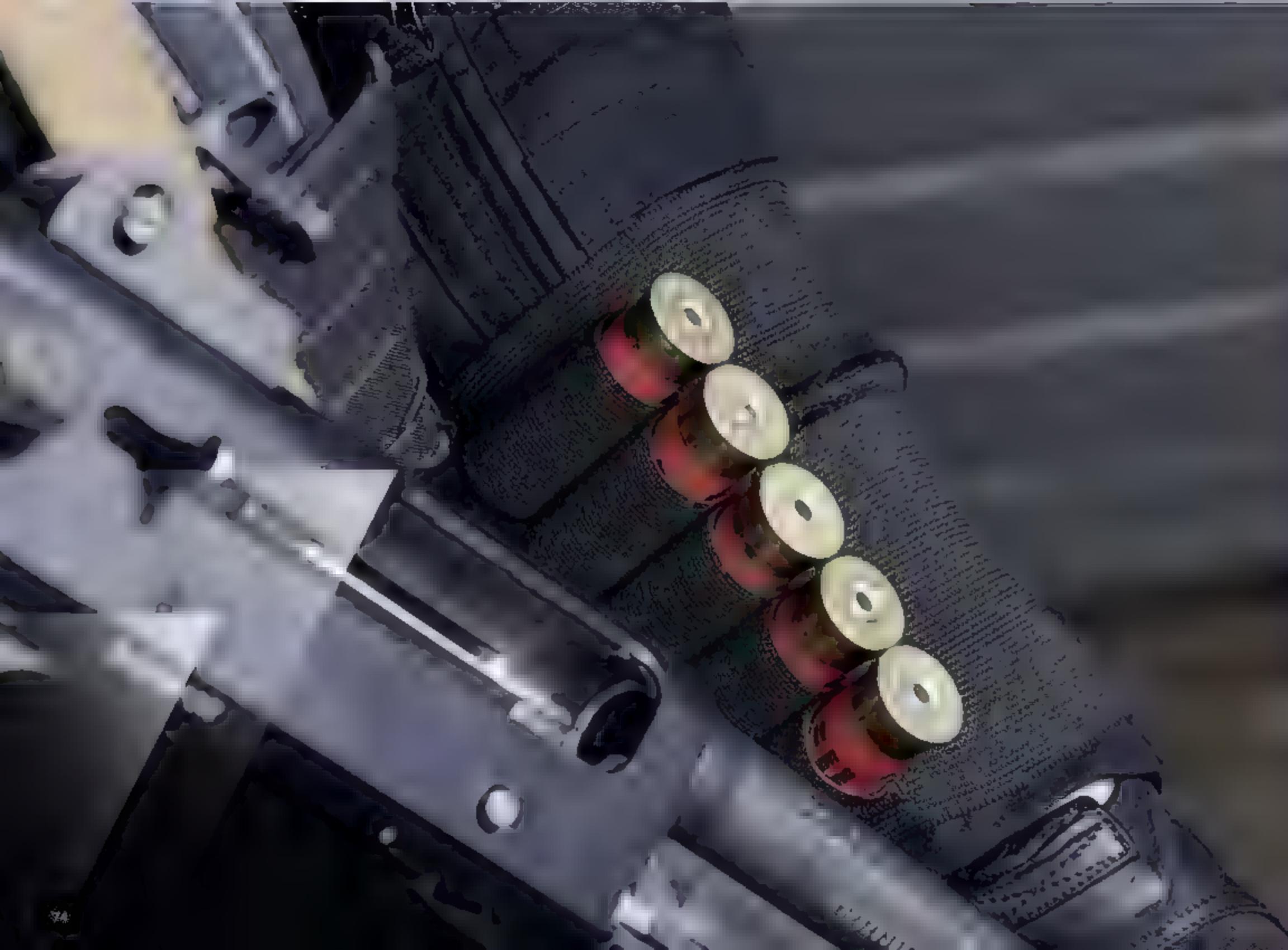
Compressed zinc powder with a mass of 32.5 g is used as the active ingredient. This safely penetrates a 34-37 type plate with a material thickness of 3mm when fired at a distance of approx. 2.5 cm from the target. The powder compact disintegrates completely upon impact with the sheet metal, which minimizes collateral risk and the user's exposure to ricochets.



### 12/70 ENTRY I

Bullet	Compressed zinc powder 12 B.B. / 32.5 g	Term of Reference	C.I.P.
Surface treatment	Black	Temperature range	-30°C to +40°C
Pressure	5528 kp/cm <sup>2</sup>	Max. chamber pressure	max. 4800 kp/cm <sup>2</sup> (21°C)
Propellant powder	Single-based propellant powder	Velocity	220 m/s (7200 f.p.s.)
Case material	Plastic / Color Green	Energy	1000 J / 10mm barrel
Cartridge weight	approx. 45.0 g	Power density	3000 J/cm <sup>2</sup>
Net explosive weight	approx. 3.8 g	2-pcs. Fixing pin / approx. 0.4 kg	300pcs. Wooden crate / approx. 19.5 kg
Item No. 292 29 20			





## 12/70 ROTTWEIL MAGNUM ENTRY II

28 g / 432 gr



The 12/70 Magnum ENTRY II is a particular shell used by special police units and military users to forcibly open doors. The shell is fully compatible with pump-action and semi-automatic shotguns.

It was developed in close collaboration with various special police units. They repeatedly expressed the requirement that doors should be opened reliably and precisely, even when firing from a distance of 10 m. The shell is therefore capable of safely penetrating a S137 sheet with a material thickness of 1.5 mm at a distance of 10 metres. This is achieved using a special 'plastic tube' containing 27 g of the zinc powder.



### 12/70 ENTRY II

Ballistic: Compressed zinc powder in the inner container 28 g / 432 gr

Steel powder

Primer

Propellant powder

Base

Cartridge weight

Case, aluminum jacket

Color: Red

Item No. 280-200-00

Term of Reference: CLP

Temperature range

20°C to 45°C

Max chamber pressure

1650 bar (2140 psi)

Velocity

280 m/s (9247 fpm)

Energy

1946 J / 700 m² Barro

Accuracy

14x0 x 10 cm / Benelli M3

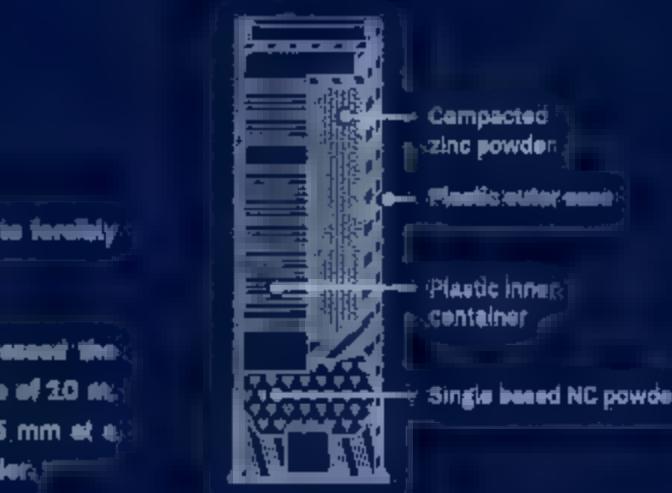
Penetration at 10 m

1.5 mm S137 / 50 m / Benelli M3

Cartridges / Weight

25pcs. Feeding box / approx. 0.15 kg

300pcs. Cardboard box / approx. 2 kg

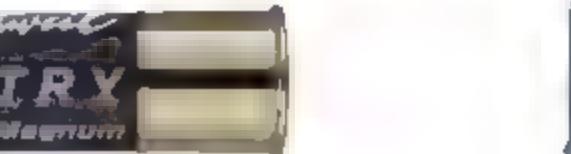


**18.2mmx70 DM209 ZINC PELLET**

Bullet	Compacted zinc powder 32.5 g / 502 gr
Bullet material	Zinc
Primer / Propellant powder	SINOXID® / Single based NC trocellose powder
Case material	Plastic / Culot Brass
Cartridge weight	approx. 45.0 g
Net explosive weight	approx. 1.8 g
Term of Reference	C.I.P.
Temperature Range	-10°C to +52°C
Mean chamber pressure	max. 1050 bar (21°C)
Velocity $v_{15}$ / Energy	320 m/s (1050 fpe) / 1665 J / 710 mm Barrel
Penetration at 2.5 cm	3mm DC01
Packaging, Weight	25pcs. Folding Box / approx. 0.95 kg 300pcs. Wooden crate / approx. 19.5 kg

## 18.2mmx70 DM209 ZINC PELLET

32.5 g / 502 gr



The 18.2mmx70 DM209 Zinc Pellet ENTRY I is a special shell for the German Armed Forces. It is fully qualified and is now widely used by the troops. It is designed for the forcible opening of doors by means of a shot placed next to the strike plate and/or the hinges. The shell is fully compatible with pump-action and semi-automatic shotguns. It is designed for shotguns with Magnum proofing according to C.I.P.

Compacted zinc powder with a mass of 32.5 g is used as the active ingredient. This safely penetrates a St-37 type plate with a material thickness of 3mm when fired at a distance of approx. 2.5 cm from the target. The powder compact disintegrates completely upon impact with the sheet metal, which minimises collateral risk and the user's exposure to ricochets.



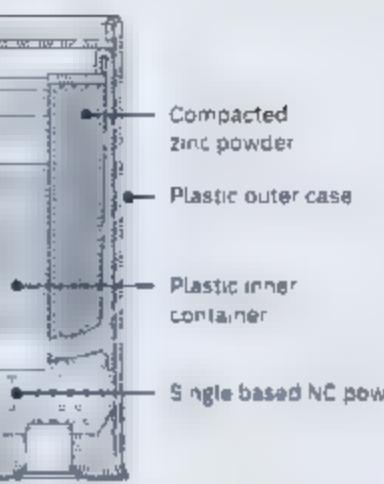
Item No. 231 51 84

**18.2mmx70 DM219 ZINC PELLET 12/70**

Bullet	Compacted zinc powder in the inner container 28 g / 432 gr
Bullet material	Zinc / Plastic
Primer / Propellant powder	SINOXID® / Single based NC trocellose powder
Case material	Plastic / Culot Brass
Cartridge weight	approx. 46.0 g
Net explosive weight	approx. 1.8 g
Term of Reference	C.I.P.
Temperature Range	-10°C to +52°C
Mean chamber pressure	max. 1247 bar (21°C)
Velocity $v_{15}$ / Energy	380 m/s (1247 fpe) / 1949 J / 700mm Barrel
Accuracy at 10 m	H+B < 50 cm / Benelli M3
Penetration at 10 m	1.5 mm St37, 5 Cart. / Benelli M3
Packaging, Weight	25pcs. Folding Box / approx. 0.95 kg 300pcs. Cardboard box, approx. 19 kg

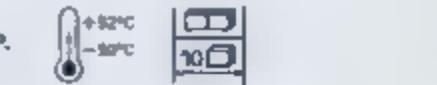
## 18.2mmx70 DM219 ZINC PELLET

28 g / 432 gr



DM219 is the designated ENTRY II shotgun shell for the German Armed Forces. It is fully qualified and has now been in use for years. In addition to the DM209, the 12/70 Magnum DM219 is a special shell used forcibly open doors. The shell is fully compatible with pump-action and semi-automatic shotguns.

The German Armed Forces repeatedly expressed the requirement that doors should be opened reliably and precisely, even when firing from a distance of 10 m. The shell is therefore capable of safely penetrating a St-37 sheet with a material thickness of 1.5 mm at a distance of 10 metres. This is achieved using a special 'plastic tube' containing 27 g of the zinc powder. The inner container disintegrates into its constituent parts, which significantly reduces the risk of collateral damage. The zinc powder atomises on impact with the hard target.



Item No. 231 64 78



# Our product feature icons



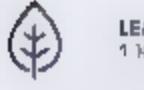
**SINTOX NON-TOXIC PRIMER**  
Low-pollutant and  
heavy metal-free



**SINTOX NON-TOXIC PRIMER**  
Low-pollutant and  
heavy metal-free  
X-ray detectable



**SINOXID PRIMER**  
- ammoxides



**LEADFREE \***  
100% free of heavy metals



**CONFORMITY ACCORDING  
TO C.I.P.**



**CERTIFICATION ACCORDING TO  
TECHNICAL TERMS OF DELIVERY**



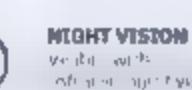
**HIGH PRECISION**



**SUITABLE FOR  
FULL AUTOMATIC**



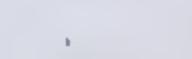
**ARMOUR PIERCING**



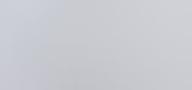
**NIGHT VISION**  
Visible and  
infrared night vision capable



**NATO**  
**EXTERNAL DIMENSIONS:**  
Ammunition is manufactured  
in accordance with  
NATO Standardized Agreements



**CLIPPED AVAILABLE**



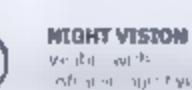
**WATERPROOF**



**TEMPERATURE RANGE**  
Functionality and usability  
of the cartridge at various  
surrounding temperatures



**SHOCKPROOF**



**MAXIMUM SHELF LIFE**



**CLIPPED AVAILABLE**

# Ballistic Data

# 9x19



## 9x19 LF FMJ 52 / 6.0 g / 93 gr

Distance	Velocity	Energy	Time of Flight	BC 0.62
(m)	(m/s)	(J)	(ms)	
0	390	458	0	
25	367	404	64	0.154
50	347	361	126	0.154
75	330	340	186	0.155
100	316	323	240	0.155
125	304	303	292	0.155
150	294	292	343	0.155
200	279	254	424	0.156
250	265	234	494	0.157
300	253	212	562	0.158
350	243	174	626	0.146
400	231	140	687	0.143
450	221	147	739	0.156
500	212	135	791	0.156
550	203	124	832	0.156
600	194	114	865	0.156

## 9x19 LF FMJ SF / 6.0 g / 93 gr

Distance	Velocity	Energy	Time of Flight	BC 0.62
(m)	(m/s)	(J)	(ms)	
0	419	527	0	
25	392	461	62	0.156
50	369	408	127	0.156
75	352	372	187	0.156
100	339	355	243	0.156
125	327	340	297	0.156
150	316	328	347	0.156
200	296	249	416	0.156
250	280	226	486	0.156
300	265	201	553	0.156
350	247	183	616	0.156
400	236	167	676	0.156
450	226	153	736	0.156
500	217	141	791	0.156
550	208	122	846	0.156
600	199	106	897	0.156

## 9x19 ACTION 4 SF / 6.1 g / 94 gr

Distance	Velocity	Energy	Time of Flight	BC 0.62
(m)	(m/s)	(J)	(ms)	
0	428	538	0	
25	395	476	63	0.159
50	372	422	127	0.159
75	359	386	186	0.159
100	346	354	246	0.159
125	335	338	296	0.159
150	324	322	346	0.159
200	298	249	419	0.159
250	282	226	489	0.159
300	267	201	556	0.159
350	249	180	619	0.159
400	236	167	679	0.159
450	226	153	739	0.159
500	217	141	794	0.159
550	208	122	849	0.159
600	199	106	899	0.159

## 9x19 ACTION 5 SF / 6.1 g / 94 gr

Distance	Velocity	Energy	Time of Flight	BC 0.62
(m)	(m/s)	(J)	(ms)	
0	428	538	0	
25	395	476	63	0.159
50	372	422	127	0.159
75	359	386	186	0.159
100	346	354	246	0.159
125	335	338	296	0.159
150	324	322	346	0.159
200	298	249	419	0.159
250	282	226	489	0.159
300	267	201	556	0.159
350	249	180	619	0.159
400	236	167	679	0.159
450	226	153	739	0.159
500	217	141	794	0.159
550	208	122	849	0.159
600	199	106	899	0.159

## 9x19 ACTION 6 SF / 6.1 g / 94 gr

Distance	Velocity	Energy	Time of Flight	BC 0.62
(m)	(m/s)	(J)	(ms)	
0	373	424	0	
25	350	386	64	0.159
50	328	348	126	0.159
75	306	320	186	0.159
100	294	296	246	0.159
125	282	276	296	0.159
150	270	268	346	0.159
200	234	229	419	0.159
250	224	219	489	0.159
300	214	209	556	0.159
350	204	199	619	0.159
400	194	190	679	0.159
450	184	182	739	0.159
500	174	179	794	0.159
550	164	174	849	0.159
600	154	164	899	0.159

## 9x19 ACTION 7 SF / 7.0 g / 104 gr

Distance	Velocity	Energy	Time of Flight	BC 0.62
(m)	(m/s)	(J)	(ms)	
0	430	520	0	
25	407	461	64	0.159
50	384	404	126	0.159
75	362	361	186	0.159
100	349	348	246	0.159
125	337	336	296	0.159
150	325	324	346	0.159
200	299	273	419	0.159
250	289	266	489	0.159
300	279	253	556	0.159
350	269	236	619	0.159
400	259	226	679	0.159
450	249	216	739	0.159
500	239	206	794	0.159
550	229	196	849	0.159
600	219	186	899	0.159

9x19



## 9x19 GREEN RANGE SXF / 6.1 g / 94 gr

Distance	Velocity	Energy	Time of Flight	BC G1
0	490	390	0	0.000
25	484	382	0	0.000
50	478	374	0	0.000
75	472	366	0	0.000
100	466	358	0	0.000
125	460	350	0	0.000
150	454	342	0	0.000
175	448	334	0	0.000
200	442	326	0	0.000
225	436	318	0	0.000
250	430	310	0	0.000
275	424	302	0	0.000
300	418	294	0	0.000
325	412	286	0	0.000
350	406	278	0	0.000
375	400	270	0	0.000
400	394	262	0	0.000
425	388	254	0	0.000
450	382	246	0	0.000
475	376	238	0	0.000
500	370	230	0	0.000
525	364	222	0	0.000
550	358	214	0	0.000
575	352	206	0	0.000
600	346	198	0	0.000

BALISTIC DATA



## 9x19 GREEN RANGE SXF / 6.1 g / 94 gr

Distance	Velocity	Energy	Time of Flight	BC G1
0	490	390	0	0.000
25	482	382	0	0.000
50	474	374	0	0.000
75	466	366	0	0.000
100	458	358	0	0.000
125	450	350	0	0.000
150	442	342	0	0.000
175	434	334	0	0.000
200	426	326	0	0.000
225	418	318	0	0.000
250	410	310	0	0.000
275	402	302	0	0.000
300	394	294	0	0.000
325	386	286	0	0.000
350	378	278	0	0.000
375	370	270	0	0.000
400	362	262	0	0.000
425	354	254	0	0.000
450	346	246	0	0.000
475	338	238	0	0.000
500	330	230	0	0.000
525	322	222	0	0.000
550	314	214	0	0.000
575	306	206	0	0.000
600	298	198	0	0.000

BALISTIC DATA



## 9x19 GREEN RANGE SXF / 6.1 g / 94 gr

Distance	Velocity	Energy	Time of Flight	BC G1
0	490	390	0	0.000
25	484	384	0	0.000
50	478	378	0	0.000
75	472	372	0	0.000
100	466	366	0	0.000
125	460	360	0	0.000
150	454	354	0	0.000
175	448	348	0	0.000
200	442	342	0	0.000
225	436	336	0	0.000
250	430	330	0	0.000
275	424	324	0	0.000
300	418	318	0	0.000
325	412	312	0	0.000
350	406	306	0	0.000
375	400	300	0	0.000
400	394	294	0	0.000
425	388	288	0	0.000
450	382	282	0	0.000
475	376	276	0	0.000
500	370	270	0	0.000
525	364	264	0	0.000
550	358	258	0	0.000
575	352	252	0	0.000
600	346	246	0	0.000

BALISTIC DATA

## 9x19 NATO BALL / 8.0 g / 124 gr

Distance	Velocity	Energy	Time of Flight	BC G1
0	370	490	0	0.000
25	363	486	0.004	0.129
50	356	480	0.008	0.152
75	349	474	0.012	0.175
100	342	468	0.016	0.198
125	335	462	0.020	0.221
150	328	456	0.024	0.244
175	321	450	0.028	0.267
200	314	444	0.032	0.290
225	307	438	0.036	0.313
250	300	432	0.040	0.336
275	293	426	0.044	0.359
300	286	420	0.048	0.382
325	279	414	0.052	0.405
350	272	408	0.056	0.428
375	265	402	0.060	0.451
400	258	396	0.064	0.474
425	251	390	0.068	0.497
450	244	384	0.072	0.520
475	237	378	0.076	0.543
500	230	372	0.080	0.566
525	223	366	0.084	0.589
550	216	360	0.088	0.612
575	209	354	0.092	0.635
600	202	348	0.096	0.658

BALISTIC DATA



## 9x19 NATO BALL SX / 8.0 g / 124 gr

Distance	Velocity	Energy	Time of Flight	BC G1
0	370	490	0	0.000
25	363	486	0.004	0.129
50	356	480	0.008	0.152
75	349	474	0.012	0.175
100	342	468	0.016	0.198
125	335	462	0.020	0.221
150	328	456	0.024	0.244
175	321	450	0.028	0.267
200	314	444	0.032	0.290
225	307	438	0.036	0.313
250	300	432	0.040	0.336
275	293	426	0.044	0.359
300	286	420	0.048	0.382
325	279	414	0.052	0.405
350	272	408	0.056	0.428
375	265	402	0.060	0.451
400	258	396	0.064	0.474
425	251	390	0.068	0.497
450	244	384	0.072	0.520
475	237	378	0.076	0.543
500	230	372	0.080	0.566
525	223	366	0.084	0.589
550	216	360	0.088	0.612
575	209	354	0.092	0.635</td

# 4.6x30



## 4.6x30 TRAINING SX / 1.7 g / 26 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	653	350	0	-
25	613	301	29	0,132
50	567	259	82	0,133
100	484	187	177	0,134
150	415	138	202	0,139
200	361	104	218	0,141
250	321	82	266	0,13
300	295	70	229	0,131
350	275	53	904	0,131
400	259	54	1092	0,131
450	244	48	1291	0,124
500	233	43	1502	0,127
550	218	38	1726	0,135
600	207	34	1961	0,129

## 4.6x30 FMJ SX / 2.6 g / 40 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	622	503	0	-
25	599	466	83	0,27
50	577	433	83	0,275
100	534	371	174	0,269
150	493	316	271	0,268
200	454	268	377	0,261
250	417	226	491	0,251
300	383	191	617	0,238
350	352	161	754	0,219
400	328	140	901	0,219
450	313	127	1057	0,267
500	303	119	1220	0,352
550	293	112	1388	0,3
600	284	105	1561	0,292

## 4.6x30 ACTION SX / 2.0 g / 31 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	688	473	0	-
25	641	411	38	0,138
50	597	356	78	0,141
100	539	295	165	0,149
150	451	203	271	0,153
200	387	150	391	0,136
250	333	111	531	0,115
300	308	95	668	0,162
350	293	85	805	0,179
400	276	76	931	0,169
450	263	69	1017	0,186
500	251	63	1143	0,232
550	239	58	1322	0,214
600	228	52	1508	0,222

## 4.6x30 AP SX / 2.0 g / 31 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	680	462	0	-
25	643	413	38	0,175
50	597	356	78	0,141
100	539	295	165	0,174
150	476	227	264	0,172
200	418	175	376	0,165
250	365	133	504	0,146
300	329	108	649	0,155
350	313	97	806	0,225
400	297	86	971	0,232
450	283	76	1143	0,232
500	274	75	1322	0,214
550	264	70	1508	0,222
600	254	65	1682	0,196

## 4.6mmx30 DM41 DEA / 2.0 g / 31 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	698	473	0	-
25	641	411	38	0,138
50	597	356	78	0,141
100	519	269	168	0,149
150	451	203	271	0,153
200	387	150	391	0,136
250	333	111	531	0,115
300	308	95	668	0,162
350	293	85	805	0,179
400	276	76	931	0,169
450	263	69	1017	0,186
500	251	63	1142	0,163
550	239	58	1322	0,214
600	228	52	1508	0,222

## 4.6mmx30 DM31 / 2.0 g / 31 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	680	462	0	-
25	643	413	38	0,175
50	597	356	78	0,174
100	539	295	165	0,174
150	476	227	264	0,172
200	418	175	376	0,165
250	365	133	504	0,146
300	329	108	649	0,155
350	313	97	806	0,225
400	297	86	971	0,232
450	283	76	1143	0,232
500	274	75	1322	0,214
550	264	70	1508	0,222
600	254	65	1682	0,196

## 4.6x30 SEMI FRANGIBLE SX / 1.7 g / 26 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	296	219	0	-
25	291	212	65	0,274
50	266	183	172	0,23
100	278	188	351	0,214
150	261	170	538	0,167
200	249	155	734	0,156
250	236	139	940	0,135
300	223	124	1158	0,12
350	211	111	1388	0,122
400	200	100	1632	0,124
450	189	89	1890	0,117
500	179	80	2163	0,12
550	170	72	2450	0,115
600	162	66	2754	0,117

## 4.6mmx30 DM21 / 2.6 g / 40 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	622	503	0	-
25	599</			

# 5.56x45



## 5.56x45 FMJ (M193) / 3.56 g / 55 gr

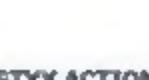
Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	925	1.519	0	-
25	899	1.435	27	0,302
100	822	1.199	115	0,293
200	721	923	245	0,279
300	625	693	393	0,272
400	535	508	566	0,266
500	454	368	789	0,261
600	381	288	1010	0,238
700	324	186	1296	0,202
800	301	162	1618	0,318
900	283	142	1961	0,31
1000	267	127	2326	0,285
1100	253	114	2712	0,29
1200	239	101	3120	0,253

## 5.56x45 NATO BALL (SS109) / 4.0 g / 62 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1**
0	925	1.711	0	-
25	898	1.613	27	0,202
100	818	1.338	115	0,281
200	719	1.034	245	0,284
300	626	784	395	0,281
400	538	579	567	0,273
500	451	407	770	0,242
600	379	287	1012	0,236
700	329	216	1297	0,237
800	298	178	1617	0,236
900	275	151	1967	0,229
1000	257	132	2343	0,234
1100	-	-	-	-
1200	-	-	-	-

## 5.56x45 TRAINING HV / 4.0 g / 62 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1**
0	710	1.008	0	-
25	668	892	36	0,157
100	553	612	160	0,161
200	436	378	365	0,178
300	350	245	622	0,18
400	299	179	934	0,164
500	268	144	1289	0,164
600	244	119	1681	0,16
700	224	100	2110	0,161
800	206	85	2577	0,159
900	191	73	3064	0,175
1000	177	63	3633	0,172
1100	-	-	-	-
1200	-	-	-	-



## 5.56x45 LF STYX ACTION / 3.7 g / 57 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	880	1.433	0	-
25	838	1.299	29	0,179
100	718	954	126	0,177
200	576	614	281	0,179
300	464	398	476	0,197
400	379	266	715	0,206
500	330	178	1007	0,152
600	249	115	1367	0,079
700	200	74	1816	0,062
800	161	48	2375	0,061
900	-	-	-	-
1000	-	-	-	-
1100	-	-	-	-
1200	-	-	-	-

## 5.56mmx45 DM11A1 / 4.0 g / 62 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	920	1.693	0	-
25	895	1.602	28	0,312
100	820	1.345	115	0,3
200	726	1.054	245	0,299
300	638	814	392	0,3
400	557	620	559	0,3
500	481	462	783	0,291
600	415	344	977	0,289
700	370	274	1234	0,347
800	338	228	1517	0,374
900	314	197	1825	0,367
1000	291	169	2156	0,275
1100	266	142	2515	0,191
1200	240	118	2911	0,145



## 5.56mmx45 DM41A1 / 4.0 g / 62 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	899	1.435	0	-
25	876	1.362	28	0,316
100	808	1.150	117	0,326
200	719	918	248	0,315
300	635	716	396	0,313
400	555	547	565	0,303
500	481	411	759	0,299
600	413	303	983	0,279
700	351	219	1246	0,236
800	314	175	1550	0,255
900	295	154	1879	0,34
1000	280	139	2228	0,354
1100	266	126	2596	0,321
1200	253	114	2983	0,31

## 5.56mmx45 DM21A1 / 4.1 g / 63 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	935	1.748	0	-
25	912	1.663	27	0,345
100	843	1.421	113	0,331
200	754	1.137	238	0,323
300	671	900	379	0,325
400	594	706	537	0,327
500	523	547	716	0,328
600	457	418	921	0,319
700	402	323	1155	0,329
800	365	266	1417	0,405
900	337	227	1703	0,416
1000	315	198	2010	0,398
1100	295	174	2339	0,327
1200	273	149	2691	0,231



# 7.62x51



## 7.62x51 NATO TRACER (M62) / 9.1 g / 140 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	846	3.257	0	-
25	829	3.129	30	0,434
100	779	2.761	123	0,433
200	714	2.320	257	0,426
300	650	1.922	404	0,411
400	588	1.573	566	0,402
500	528	1.268	746	0,388
600	469	1.001	946	0,361
700	412	772	1174	0,329
800	358	583	1434	0,277
900	319	463	1732	0,259
1000	294	393	2059	0,268
1100	274	342	2412	0,252
1200	257	301	2790	0,25

## 7.62x51 NATO IR TRACER / 9.1 g / 140 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	846	3.257	0	-
25	829	3.129	30	0,434
100	779	2.761	123	0,433
200	714	2.320	257	0,426
300	650	1.922	404	0,411
400	588	1.573	566	0,402
500	528	1.268	746	0,388
600	469	1.001	946	0,361
700	412	772	1174	0,329
800	358	583	1434	0,277
900	319	463	1732	0,259
1000	294	393	2059	0,268
1100	274	342	2412	0,252
1200	257	301	2790	0,25

## 7.62x51 NATO BALL (M80) / 9.45 g / 146 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*	BC G2**
0	825	3.233	0	-	-
25	807	3.093	31	0,405	0,215
100	754	2.700	127	0,401	0,216
200	686	2.235	266	0,399	0,215
300	621	1.832	419	0,396	0,213
400	559	1.484	589	0,389	0,213
500	501	1.192	778	0,388	0,217
600	444	936	990	0,386	0,211
700	389	719	1230	0,316	0,205
800	342	556	1505	0,28	0,202
900	310	456	1814	0,272	0,107
1000	288	393	2149	0,274	0,120
1100	270	346	2508	0,267	0,131
1200	254	306	2891	0,256	0,136

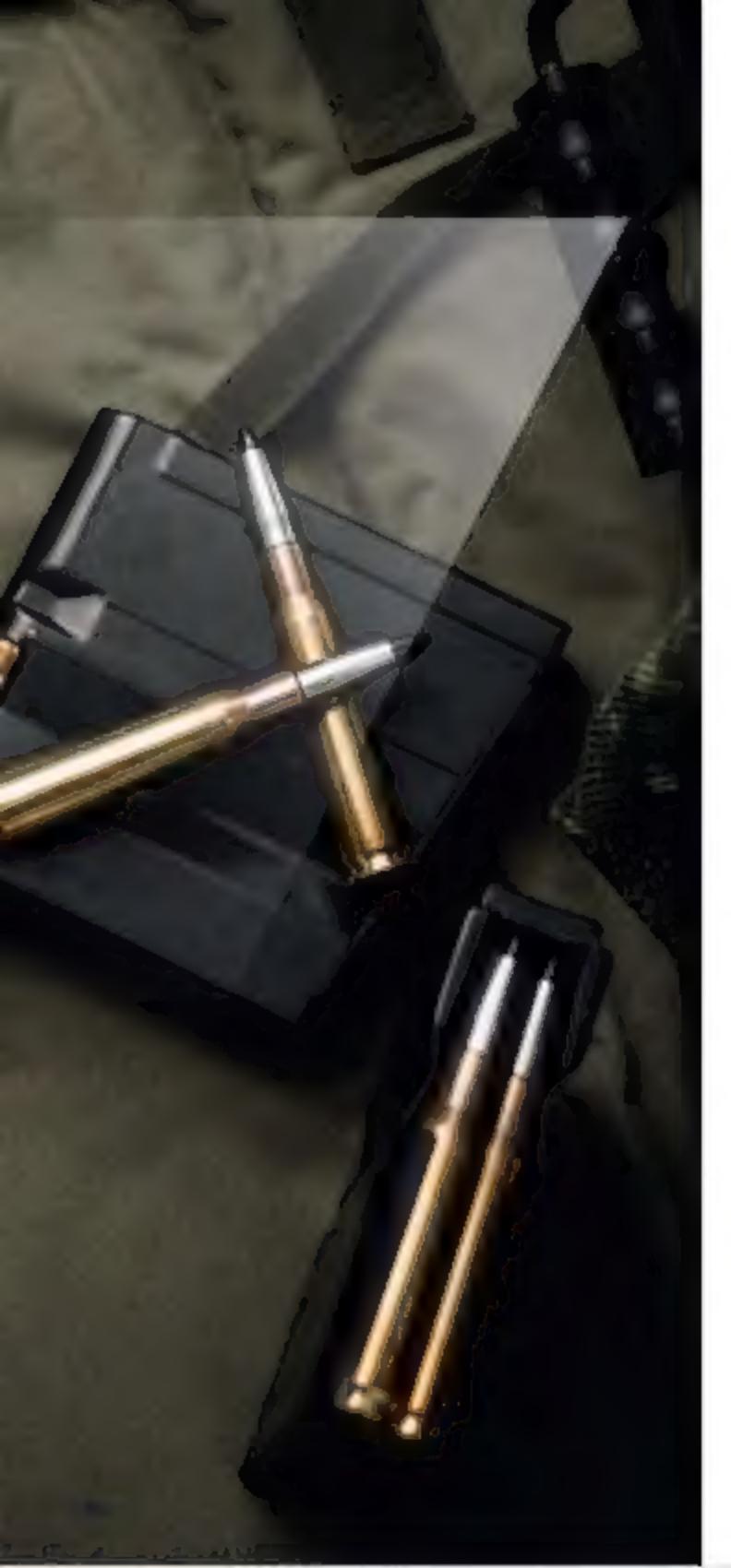
## 7.62mmx51 DM21A3 / 9.1 g / 140 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	845	3.249	0	-
25	828	3.119	30	0,433
100	777	2.747	123	0,425
200	710	2.294	258	0,412
300	647	1.905	406	0,416
400	586	1.562	568	0,407
500	528	1.262	748	0,402
600	473	1.018	948	0,388
700	422	810	1172	0,376
800	374	636	1424	0,336
900	335	511	1708	0,308
1000	309	434	2019	0,315
1100	288	377	2355	0,287
1200	270	332	2714	0,267

## 7.62mmx51 DM111A2 / 9.55 g / 147 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*	BC G2**
0	825	3.233	0	-	-
25	807	3.093	31	0,405	0,215
100	754	2.700	127	0,401	0,216
200	686	2.235	266	0,399	0,215
300	621	1.832	419	0,396	0,213
400	559	1.484	589	0,389	0,213
500	501	1.192	778	0,388	0,217
600	444	936	990	0,386	0,211
700	389	719	1230	0,316	0,205
800	342	556	1505	0,28	0,202
900	310	456	1814	0,272	0,107
1000	288	393	2149	0,274	0,120
1100	270	346	2508	0,267	0,131
1200	254	306	2891	0,256	0,136





# 12.7x99



## 12.7x99 LF TRACER SX / 40.5 g / 625 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	888	15.968	0	-
25	877	15.575	28	0,697
100	843	14.384	116	0,661
200	800	12.947	237	0,68
300	758	11.618	366	0,674
400	718	10.419	501	0,688
500	679	9.313	644	0,683
600	641	8.296	796	0,684
700	605	7.386	957	0,689
800	569	6.529	1127	0,67
900	534	5.746	1309	0,66
1000	500	5.034	1502	0,651
1100	467	4.389	1710	0,632
1200	435	3.804	1932	0,604

## 12.7x99 LF IR-TRACER SX / 40.5 g / 625 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	888	15.968	0	-
25	877	15.575	28	0,697
100	843	14.384	116	0,661
200	800	12.947	237	0,68
300	758	11.618	366	0,674
400	718	10.419	501	0,688
500	679	9.313	644	0,683
600	641	8.296	796	0,684
700	605	7.386	957	0,689
800	569	6.529	1127	0,67
900	534	5.746	1309	0,66
1000	500	5.034	1502	0,651
1100	467	4.389	1710	0,632
1200	435	3.804	1932	0,604

## 12.7x99 LF BALL SX / 42.5 g / 656 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	900	17.233	0	-
25	889	16.794	28	0,704
100	856	15.571	114	0,692
200	813	14.346	234	0,687
300	771	13.132	360	0,68
400	730	12.024	493	0,679
500	691	11.046	634	0,69
600	653	10.061	783	0,685
700	616	9.063	941	0,68
800	580	8.149	1108	0,678
900	545	7.312	1265	0,675
1000	512	6.571	1425	0,675
1100	479	5.826	1677	0,66
1200	447	5.147	1937	0,621

## 12.7x99 SR SOLID SX / 45.2 g / 698 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	881	17.541	0	-
25	859	16.876	29	0,345
100	813	14.212	120	0,333
200	771	11.425	253	0,339
300	735	9.113	402	0,344
400	696	7.163	569	0,339
500	653	5.560	758	0,334
600	612	4.218	974	0,311
700	575	3.178	1223	0,268
800	530	2.461	1509	0,259
900	490	2.034	1827	0,251
1000	457	1.697	2176	0,2
1100	423	1.447	2557	0,199
1200	394	1.237	2970	0,181

## 12.7mmx99 DM101A1 / 45.5 g / 656 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	900	17.213	0	-
25	889	16.794	28	0,704
100	856	15.571	114	0,692
200	813	14.346	234	0,687
300	771	13.132	360	0,68
400	730	12.024	493	0,679
500	691	11.046	634	0,69
600	653	10.061	783	0,685
700	616	9.063	941	0,68
800	580	8.149	1108	0,678
900	545	7.312	1265	0,675
1000	512	6.571	1425	0,675
1100	479	5.826	1677	0,66
1200	447	5.147	1937	0,622

## 12.7x99 SR SOLID TRACER SX / 45.8 g / 707 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	871	17.173	0	-
25	849	16.506	29	0,343
100	806	14.141	121	0,347
200	766	11.404	255	0,346
300	731	9.106	405	0,347
400	692	7.219	573	0,352
500	656	5.620	762	0,34
600	614	4.299	979	0,321
700	577	3.242	1226	0,291
800	533	2.527	1509	0,273
900	492	2.076	1825	0,25
1000	457	1.744	2171	0,216
1100	423	1.477	2549	0,192
1200	396	1.263	2958	0,187

## 12.7x99 SR SOLID IR-TRACER SX/45.8 g/707 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1*
0	871	17.173	0	-
25	849	16.506	29	0,343
100	806	14.141	121	0,347
200	766	11.404	255	0,346
300	731	9.106	405	0,347
400	692	7.219	573	0,352
500	656	5.620	762	0,34
600	614	4.299	979	0,321
700	577	3.242	1226	0,291
800	533	2.527	1509	0,273
900	492	2.076	1825	0,25
1000	457	1.744	2171	0,216
1100	423	1.477	2549	0,192
1200	396	1.263	2958	0,187

## 12.7x99 HC SX / 47.5 g / 733 gr

Distance (m)	Velocity (m/s)	Energy (J)	Time of flight (ms)	BC G1\*



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